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THE ADVANCED DEGREE AND VOCATIONAL-TECHNICAL EDUCATION LEADERSHIP (A SYMPOSIUM).

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A SYMPOSIUM WAS HELD TO DEVELOP A DOCTORAL CURRICULUM FOR VOCATIONAL AND TECHNICAL EDUCATION. THE FORMAT INVOLVED THE PREPARATION OF WORKING PAPERS, COUNTERPART REACTIONS, AND ROUNDTABLE DISCUSSIONS. ALL 48 PARTICIPANTS RECEIVED COPIES OF THE WORKING PAPERS PRIOR TO THE SYMPOSIUM. PARTICIPANTS WERE BROKEN UP INTO SMALL DISCUSSION GROUPS UPON COMPLETION OF EACH PRESENTATION OF A WORKING PAPER. THEY AGREED THAT A DOCTORAL PROGRAM FOR FUTURE VOCATIONAL AND TECHNICAL LEADERS IS NECESSARY. IT WAS ALSO PROPOSED THAT BY ITS VERY INTERDISCIPLINARY NATURE THE VOCATIONAL-TECHNICAL DOCTORAL PROGRAM SHOULD ENCOMPASS SEMINARS, INTERNSHIP, AND READING SO THAT THE WHOLE PROGRAM WOULD BECOME A LABORATORY AS CONTRASTED WITH A SERIES OF COURSES. THE INTRA-UNIVERSITY COMMITTEE AT RUTGERS WILL ACT UPON THE RECOMMENDATIONS WHICH HAVE COME FROM THE SYMPOSIUM TO DEVELOP A MODEL FOR THE DOCTOR OF EDUCATION MAJOR IN VOCATIONAL-TECHNICAL EDUCATION. (GD)

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FINAL REPORT

THE ADVANCED DEGREE AND VOCATIONAL-TECHNICAL EDUCATION LEADERSHIP (A SYMPOSIUM)

RUTGERS - THE STATE UNIVERSITY
NEW BRUNSWICK, NEW JERSEY

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THE ADVANCED DEGREE

and

VOCATIONAL-TECHNICAL EDUCATION LEADERSHIP

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INTRODUCTION

During this decade more has been written and said about vocational-technical education than in the past half century. This dialogue leads directly into the problem of providing leadership for such educational offerings.

Being sensitive to this, the new Department of Vocational-Technical Education at Rutgers University took the initiative to inaugurate a symposium focusing on the problem of developing leadership through doctoral level programs. Through the use of some of its own resources, supplemented by a grant from the Vocational Division of the United States Office of Education under the aegis of Section 4(c) of the Vocational Education Act of 1963 Contract Number OE-6-85-053, it was possible to bring together outstanding representatives from other disciplines to work with vocational educators to concentrate on the problem.

The format involved the preparation of working papers, counterpart reactions, and round table discussions. Papers were forwarded to the participants for study prior to the symposium which took place from noon December 17 to noon December 19, 1965. There were forty-eight participants in attendance at the symposium sessions.

In general, each author of the working paper was asked to relate the contributions his discipline could make to the preparation of future vocational leaders. Specifically, each was asked to react to the following questions:

- What will be the challenge of preparing youth and adults for the world of work during the next decade?
- How does your discipline relate to the problem of man, education, and work?
- What contributions can your discipline make to the development of a new breed of vocational-technical educator in terms of discrete content, experiences, and techniques?
- How can leadership, and especially those who may be directly responsible for administering vocational and technical programs (both at the secondary and post-secondary levels) be best prepared?
- What role, if any, can an internship play?
- Should graduates of such a program be research oriented?

The results of the symposium, although having particular implications to the unfolding of the doctorate program at Rutgers, provide interesting, exciting, provocative, stimulating, and refreshing substance for all who are concerned with reviewing or planning new advanced programs for vocational-technical education.

Gratitude is extended to those who prepared papers, presented reactions, and participated, as well as those members of the Rutgers faculty who contributed to the success of the symposium.

John L. O'Brian
January 22, 1966

FOREWORD

Vocational-technical education, in a university setting, can no longer be viewed as a narrow area of specialization designed to serve immediate utilitarian goals. It has recently been recognized as an essential resource in solving a number of our national social and economic problems. On the home front we are committed to the elimination of poverty and equal opportunity for all our citizens. We are faced with problems of the unemployed youth, the hard core unemployed, those dislocated by technological advancement, and the under-employed. At the same time there exists in industry a need for skilled and technical level personnel. The need for training and retraining is evident in all these endeavors, and vocational and technical education is being called upon to meet this challenge. Universities who intend to contribute to the total national effort must plan and staff in breadth, in depth, and for flexibility on a scale unparalled in the history of this field.

Recognition of the vital role that vocational and technical education can play in our present day society resulted in the passage of the: Vocational Education Act of 1963, the Area Redevelopment Act, the Manpower Development and Training Act, and the Economic Opportunity Act. But legislation only provides the legal and financial means.

To translate these resources into ongoing programs, demands trained and skilled manpower, vision, and enlightened leadership. Teachers, administrators, teacher educators, and researchers constitute the educational manpower needs necessary to meet the challenges of industry, the war on poverty, and the changing climate of work in an era of automation. The Department of Vocational-Technical Education of Rutgers University is deeply concerned with the development of a doctoral program designed to meet the manpower and leadership needs of an industrial technological society in transition. This publication is an outgrowth of one aspect of the developmental work that is taking place.

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A New Breed of Leadership For Vocational-Technical Education

by

Carl J. Schaefer[1]

President John F. Kennedy, in his *Manpower Report*, (1963 p. xii) said: "Manpower is the basic resource. It is the indispensable means of converting other resources to mankind's aid and benefit. How well we develop human skills is fundamental in deciding how much we will accomplish as a nation." The development of human skills takes place in many forms and areas, including post-secondary technical education, training on the job, apprenticeship programs, training and retraining by governmental agencies, as well as vocational and college preparatory training in the secondary schools. Leadership to provide our nation an abundant basic manpower resource is central to the problem.

In our affluent society and modern day technology, vocational and technical education, and more important, vocational and technical educators have been "dubbed" narrow in their horizons for not providing a broad enough education for youths and adults. If this is the case, obviously the education which these educators have received has resulted in them a uniformly narrow and distorted view of modern life.

It has been suggested that the vocational educator with his limited vision concentrates only on the immediate occupational objectives and not on the dynamic vocational needs of our human resources. Admittedly, there is need for men who will seek and attempt to provide for life's specificities. Socrates had this in mind when he refuted the unexamined life. However, the examination of a viable life for today's society will reveal the necessity for breadth and concern for man's total potential for good citizenship advancing simultaneously with technology, and keeping abreast with social and economic change. Future leaders of vocational and technical education must be sensitive to these needs as well as to be equipped, through intellectual balance, to meet the challenge of modern day occupational needs of men and women alike.

The Problem

Clearly stated the problem is to develop, by means of a doctoral degree program, a new breed of leadership (administrators, and researchers) for vocational-technical education.

Specifically, the problem centers itself in offering for the first time, a Doctor of Education degree (Ed.D) program with a major in vocational-technical education at Rutgers–The State University, Graduate School of Education. As such, the problem demands an imaginative and innovative approach of an interdisciplinary flavor to find an appropriate solution in a field entrenched in highly traditional and badly fragmented doctoral level programs now in operation at various universities. The present traditional pattern emphasizes the doctorate major in specific areas of vocational and technical education, i.e., agriculture, trade and industrial, distributive, etc., and not a unified approach to the total problem of man, education, and work that must be used to combat modern societial change.

To imply that vocational and technical education leaders are self-satisfied with their ability to cope with today's technological change is tantamount to misunderstanding. To say that all vocational and technical educators are aware of the need for broadening their horizons also would be a gross misstatement.

Today, as never before in our history, all education needs fresh conceptualizations and imaginative hypotheses based on new or refined knowledge. Especially in education for the world of work there is a desperate need for new infusions of a sense of society and human values.

It is obvious that vocational and technical education is faced with new challenges which even surpass those of the World War II years when public school vocational programs ran around the clock to train the nation's man and woman power to produce the goods of war. Today the war is of a different nature, but as insidius as the past.

Almost a decade ago Michaels and Somers (1955) called attention, among other things, to the need for the upgrading of teacher education programs of vocational and practical arts education.

President Johnson's "war on poverty" is firmly entrenched in efforts to provide job training through innovations and approaches heretofore unconceived by the traditional vocational educator.

Venn, (1963, p. 1) puts it this way, ". . . technology has created a new relationship between man, his education, and his work, in which education is placed squarely between man and his work. Although this relationship has traditionally held for *some* men and *some* work (on the professional level for example), modern technology has advanced to the point where the relationship may now be said to exist for *all* men and for *all* work."

Such a backdrop serves to call attention to the need through an exhaustive examination of a "new breed" of leadership for vocational and technical education.

Review of Literature

Early efforts of the Ford Foundation, Fund for the Advancement of Education, were focused on the problem of teacher education in terms of liberalizing scholarly and professional training (Woodring, 1960). The liberalizing aspect at the doctorate level provides an urgent and timely challenge to vocational and technical leaders of both the present and future. In a sense we are talking about the "executive type" of vocational and technical educator, whether their role be that of teaching at the highest level (college or university) or administering local, state, and national programs. Consequently, the preparation of a new breed of vocational-technical educator deserves attention of top priority.

Need for a more liberally educated practitioner of vocational-technical education may parallel some conclusions drawn by modern industry. Industry has suggested that the technically trained person or "specialist," as frequently portrayed by the vocational and technical educator of today, needs to be broadened if he is to keep pace with the dynamic demands brought about by our free society. Leading industrial establishments have, consequently, endeavored to institute programs of liberal education after specialized training rather than before such training. The University of Wisconsin, Industrial Management Institute, is one of the older programs of this nature. The program is designed to serve all branches of management–top, middle, and supervisory. The program consists of five basic divisions: general management seminars, management conferences, management workshops, supervisory institutes, and business institutes (Siegel and Whipple, 1957).

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[1] Dr. Schaefer is Professor and Chairman, Department of Vocational-Technical Education, Graduate School of Education, Rutgers - The State University.

In a like manner, the Institute of Humanities Studies for Executives, which is perhaps the best known of the liberal education programs for executives, and quite often referred to as the Bell Telephone Experiment provides such liberalizing opportunities through the University of Pennsylvania. Wilfred D. Gillen, President of the Bell Telephone Company of Pennsylvania, in an address stated, "We felt that we needed some kind of a program that would sharpen the individual's creative insight, widen his frame of reference to many fields of human behavior and provide him with some techniques with which he could test the logics and consistency of his own thinking." (Siegel and Whipple, 1957). The Clark University Institute is quite similar to the Bell experiment. It consists of a three month, full-time educational program devoted exclusively to liberal and humanistic studies. Cost to industry, without apparent objection, is twelve hundred dollars for a three-month program plus full salary to participants.

Miller (1963) in relation to expanding liberal education by introducing liberal goals into vocational courses states, "In the technical realm, engineering schools in particular have attempted to develop methods of teaching aimed at precisely such objectives (liberal education);[2] Carnegie Institute and MIT have notably succeeded in infusing their curriculums with undeniably liberal skills."

Such efforts, although not specifically directed to the task, throw light on the problem of "the liberal education" of vocational and technical leadership personnel. It could be well hypothesized that a similar liberalizing of "executive type" vocational and technical educators should take place in the advanced degree being proposed at Rutgers.

Another implication but not to be misconstrued as a direct opposite of the former point, is that advanced degree candidates at any level of teacher education need to study a number of things that a person seeking only competency in subject matter such as engineering need not study. These are, of course, matters related to pedagogy. A number of vocational and technical advanced degree programs at teacher education institutions are now busy offering instruction in pedagogy. However, their approach is largely of a formal type and not intrinsically connected with the problems that the advanced degree seeker will actually face once he is either teaching college courses or administering at the local, state or national level. Attempts have been made at the undergraduate as well as the graduate level in other areas of education to close the gap between the formal and informal approaches to the problem. Cadet teaching, apprenticeships, field experiences, and internships have been employed, but to a limited extent. A review of the literature on this point seem to reveal the following:

The internship idea was brought to the United States by medical students who studied abroad. As early as 1896 the medical internship was inaugurated at the Massachusetts General Hospital (Faron 1949). Not as well known, and appearing on the scene at a later date, was the internship program for hospital administration offered by the University of Chicago in 1934. Lepawsky (1949) cites Charles A. Beard, who, in 1916, when director of the New York Training School for Public Service, advocated the issuance of academic credit for internships served in approved administrative offices. As a result, the internship became part of the school's curriculum. Until 1949 the National Institute of Public Affairs had as its chief purpose the placing of a carefully selected group of college graduates as interns in the various agencies of the Federal Government (Mosher and Kingsley, 1941 p. 277). Even today the Federal Government, through the intern option of the Federal Service Entrance Examination, selects applicants for its internship programs.

As late as May, 1960, Eckelberry reported that the University of Illinois began an intern program in the College of Engineering. The Ford Foundation gave a grant of $207,000 to put the plan into operation. A total of 30 students participated (Eckelberry 1960). In a similar manner the Carnegie Corporation has supported a number of professorial internship programs.

An examination of the literature indicates that there is not complete agreement as to the detailed nature of what should constitute an intern program for the professional educator. Reutter, (1952) in his discussion of the evaluation of the intern program for school administrators inferred that such experiences vary in their details and objectives.

As used in the United States, internship is synonymous with education for the professions. The internship as a concept should not be made so broad as to embrace every problem-solving situation. This would define education itself. The internship, as described by Newell and Will (1951), should be limited to the period just prior to the time when the student qualifies to practice his profession and should carry with it extensive professional responsibilities.

The Cooperative Programs in Educational Administration, Middle Atlantic Region, experimented with the professor-internship during the early 1950's as a means of strengthening the educational programs of potential teachers of educational administration. O'Brian (1963) in a study evaluated the professorial internship in educational administration and came to the conclusion that "The professorial internships should be reactivated and given status in the curriculum commensurate with the importance of the position." Other findings of the O'Brian study revealed: the sample which included 14 professional interns at nine Middle Atlantic institutions, indicated that the internship might well be considered a substitute for the writing of a dissertation. It was pointed out, however, that the internship in no way should be considered a substitute for acquiring adequate experience and competency in research techniques. A more recent study by the Committee for the Advancement of School Administrators (1964) supports the notion that internships for various positions as school administrator, principal, and supervisor are useful. Moreover, the intern experience has helped interns attain professional competency and administrative advancement.

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[2] Insert in parenthesis added by author.

In January, 1963, an Ad Hoc Committee on graduate study in education and psychology reported on a year-long investigation of the Pennsylvania State University doctorate of education program. Among other things this report emphasizes the recruitment of graduate students and states, "Although there are many students seeking admission to graduate schools, there are many graduate schools to accommodate them, and a supply of good students is limited. In general, this means that good graduate students must be recruited. Nowadays it is necessary to buy good students as one administrative official put it." (Ad Hoc, 1963, p. 2-3). Moreover, relative to admission the report states that it may be well to consider the *National Teachers Examination* (ETS) as an additional screening device. Relating to program structure the report goes on to say that as professional degrees, the M. Ed. and D. Ed. might profitably be compared with other professions—e.g., law and medicine—where considerable prescription of course and training sequences and internships is the rule. It is unlikely that educators alone can be sensitive to all the inner disciplinary aspects of education. As in an applied field, education cannot be fully responsible for depth in the subject disciplines, as well as for training in application, and organization of learning materials. Graduate students must be encouraged to take work in cognate disciplines and if necessary more joint appointments between education and the cognate disciplines must be encouraged (Ad Hoc, 1963).

The literature, although, not explicitedly directed to the problem at hand, conveys insights which might well be capitalized on and expanded during the planning phase of the doctorate program under consideration.

It is anticipated the proposed pilot program for advanced degree candidates (Doctorate of Education) majoring in vocational-technical education at Rutgers would attempt to build on innovations of the internship concept. These experiences would be used for both broadening and focusing the horizons of the candidates.

Vocational and technical education always has been faced with changing situations, but never has the change been so constant, powerful, and full of hazards. The flowing of technology, societial unrest, and labor market upheavals has accelerated at a speed far greater than innovations to keep vocational and technical educators apace. It is long overdue that a "new breed" of leadership be developed. As Broudy (1963), put it, "The only genuine relevant answer to the critics of professional education is to give it the content and structure to make it truly professional."

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Challenges to Vocational Education During the Decade Ahead

by

Donald E. Super[1]

From having been a well-established, secure, and even static field, vocational education has become during the past few years, and particularly with the funding of the Vocational Education Act of 1963, a dynamic field. It is full of challenges which both stimulate and threaten those who are established in it, attract others who have previously had little interest in it, and require that others give serious thought to these challenges and to ways of meeting them, however desirous they may be of not seeming to climb on a bandwagon or to join a gravy train. The invitation to prepare a paper on important issues in vocational education during the decade ahead is therefore itself a challenge.

It should be clear, however, that I write as an outsider looking in, as a vocational psychologist and vocational guidance specialist who has had many and frequent contacts with vocational and technical education without ever having had this as his primary concern. Among the most recent experiences which contribute to the thinking back of this paper are participation in one of the Advanced Research Seminars in Vocational Education organized under the auspices of the Office of Education, committee meetings in Washington on the guidelines for the use of research funds in vocational education under the Act of 1963, meetings at the state and county levels in several Eastern states on current developments in vocational education, and a recent meeting organized by a committee in my own institution on our role, as a graduate school of education, in vocational and technical education (parts of this paper are based on a paper prepared for that meeting). If these thoughts are helpful to others engaging in similar study this is naturally a source of personal satisfaction.

Three Challenges

Vocational education today faces three major challenges. One of these it understands and welcomes, although those who are responsible for this field of education are not unanimous in their responses to it. The second is, along with the first, recognized by the Vocational Education Act of 1963 and by many of the more thoughtful leaders in vocational education, but tends to be overtly or covertly rejected by large numbers of vocational educators. The third is recognized largely by certain manpower specialists and by some observers of the social scene and is not, today, even admitted as a concern of vocational education by most educators. These three challenges are, respectively, 1) the demand for increasing numbers and percentages of skilled and technical workers, 2) the vocational education, i.e., the education for work, of those who become semi-skilled workers, and, 3) the avocational education for those in whose lives work is likely to play a declining role temporally and psychologically.

Skilled and Technical Occupations

It has been frequently pointed out that the industrial revolution has, in its more mature forms, moved to eliminate the semi-skilled jobs which it first created in such great numbers, and to bring about a demand instead for increasing numbers of skilled workers. As industrial change proceeds in its automated form, it creates demands for increased skill and increased technical knowledge in these skilled workers. A new category of worker has, in the opinion of some, emerged: the technician. He is more able, more highly trained than the skilled worker, but less so, and less responsible than the technologically trained professional.

This increased emphasis on skill has been interpreted by many vocational educators as justification for their programs, and the increased funds are viewed by them as funds for the expansion and improvement in various minor ways of what they are already doing. More money is taken to mean more of the same for larger numbers of people.

Opposed to this point of view, however, is one which stresses the level of education needed in order to master the knowledge and to acquire the skills called for by the more highly skilled and technical occupations of the decade ahead. In his chapter in the 64th Yearbook of the National Society for the Study of Education (Barlow, 1965), Ginzberg urges that, because of this increase in required skill level, all students capable of completing an academic program in high school be encouraged to do so, postponing vocational and technical education until the post-high-school years. In the same volume Haskew and Tumlin take a somewhat similar position, proposing that the common school become what they call *preparatory* rather than *finishing*, leaving what they label *employment training* for the post-high-school years. These latter writers do, it is true, advocate a curriculum which is not strictly academic in its nature, and not vocational in the traditional sense, but one which is permeated with a work orientation which they propose as a redefinition of vocational education at that level.

I would like to propose another characteristic of vocational education in the secondary school, another objective which it should seek to attain along with the development of readiness to work. This is that vocational education in the secondary school should be *exploratory*. A better way of putting it would be that secondary education should, in developing a readiness to work, enable a pupil to find out about his abilities and interests and how they may enable him to fit into the world of work, and should give him an orientation to occupations and to careers which will provide a basis for making occupational decisions when and as they need to be made. While doing this his education should, in Haskew and Tumlin's sense, be preparatory. It should help him to acquire the basic skills (communicative, computational, and social) which will enable him to function in society, and to acquire the special vocational training which he will seek in a technical institute, in the armed forces, or in industry.

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[1] Dr. Super is Professor of Psychology and Guidance, Teachers College, Columbia University.

The notion that secondary education should be, at least in part, exploratory is not novel. It was at the heart of the junior high school movement, but was lost sight of as junior high schools became strictly preparatory for high school or for vocational school. The problem was that the concept of exploration was never made operational in the classroom, in the shop, in activities, or in employment. Even cooperative employment programs have had either a training emphasis or, much more rarely as at Antioch College, a liberal educational objective. But the need for exploratory use of school and college courses and of part-time and summer employment have been stressed by studies of vocational maturity in the ninth grade (Super and Overstreet, 1960) and by numerous case studies (e.g., Marjorie Miller in Super, 1957, pp. 92-100).

Vocational exploration denotes the process of experiencing work and vocationally related activities in ways which increase understanding of the nature of occupations and of one's own work-related aptitudes, abilities, and interests. It has been found, for example (Hoffman, 1958), that blind persons who have performed manual chores at home do better in workshop training, independently of manual dexterity; they are better oriented to the industrial task, even though the task itself is different, as a result of having made beds, emptied wastebaskets, put up screens, etc. That teachers of vocationally relevant subjects have too often failed to make their subjects exploratory is partly the result of the subject-matter specialist's interest in mastery rather than in orientation, partly a result of ignorance as to how to create exploratory attitudes in boys and girls whose curiosity has not been aroused.

The proper use of exploratory experiences would, I believe, provide a partial answer to the need pointed out by Ginzberg (Barlow, 1965; 34), to provide "appropriate curricular differences" for the one-quarter to one-third of our high school pupils who cannot apparently benefit from an academic program. They need something more concrete, more realistic, than academic subjects verbally taught. Vocational activities can be made to savor of the adult, the real, the outside, world. The exploratory use of courses and activities would provide that pervasive but ill-defined element sought by Haskew and Tumlin (Barlow, 1965; 83) which orients pupils to work without seeking to train them for work.

A first task, then, in the field of vocational education is to devise ways in which vocational exploration can take place during the secondary school years. One can thus lay the foundations for future vocational decisions, as well as make concrete and real what would otherwise be, to some, an abstract and hence unreal experience. This is a task which calls for the cooperation of experts in vocational development, in counseling, in curriculum and instruction, and in vocational education, unshackled by either academic or trade traditions. If it is well carried out the pupils who are capable of skilled and technical training will be able to move ahead to appropriate post-high-school education and training, and the minority who are not able to do this will have an orientation to work and to occupations which will be helpful in pursuing the varied career of a semiskilled worker.

A second task, therefore, in education for the skilled trades and for technical occupations below the professional level is to expand and improve post-high-school education in these fields. Here it seems important to make the distinction between education and training, for there is considerable validity in Ginzberg's (Barlow, 1965; 21) point that much training takes place on the job more realistically and more economically than in schools. Especially in an age of rapid technological change does this seem important, despite the difficulties which face the curriculum maker and the syllabus developer who attempt to distill, from the specific jobs, the elements which legitimately constitute formal education for a trade. Closely related to this problem is that of identifying and describing jobs in a rapidly changing field—the job title of electronics technician, for example, is one which includes a great range of skill levels and of duties.

I have put this task in curricular and job analysis terms, but it needs also to be viewed in fiscal and in sociological terms. Under the former heading come the problems of financing and establishing or converting a sufficient number of well-located post high school institutes. Under the latter heading are the problems of creating a readiness on the part of the public to accept the postponement of what Haskew and Tumlin call "finishing" education until grades 13 and 14. California's experience suggests that, as affluence increases, and as appropriate industrial opportunities justify it, this can be done. But it may be worth noting also that some observers in California have pointed to a tendency for the post-high school institutions to become increasingly academic and for vocational education to retreat to the secondary school. Whether this is evidence of a weakness in the basic idea of post-secondary vocational education or in the attempt to implement the basic idea is not now clear, but I suspect it is the latter.

The Semiskilled

Barlow's chapter in the NSSE Yearbook (Barlow, 1965; 5 and 13) makes two statements which reflect a contradiction inherent in vocational education as it has developed in this country. He states, on the one hand, that "the contemporary program of vocational education encompasses the vocational needs of 85 percent of the persons who enter and work in the nation's labor force," if one excepts those preparing for the professions. He later states that "education in general has failed to help the disadvantaged youth, and vocational education has largely eliminated the group by imposing selective devices." It would be more nearly correct to state that vocational education meets the needs of only those who aim at the skilled trades, and fails to meet the needs of nearly half of the boys and girls who enter high school and then the labor market as semiskilled workers. Although the legislation is so phrased as to make these pupils its charges, vocational education has, either intentionally or unintentionally, shunted them off to general education or into the limbo of the dropout.

The traditional stance of vocational education is that an occupation is a life work, something for which one prepares either in a specialized educational program or in an even more focused apprenticeship, something one enters upon completion of training and pursues for the rest of one's working life. One chooses this occupation because of capacity for it and interest in it, because of opportunity to use these abilities and interests to earn a living. The craft is a matter of pride; it provides status, identity, and security.

There is a middle class bias in this conceptualization of occupations and of vocational education, for it is the middle class which knows, values, and experiences stability and commitment. The bias is fine for those who have the capacity, the interest, the sense of commitment, and the opportunity to pursue one specialized occupation. But it is not appropriate for the large numbers of young people and adults who do not have these middle class characteristics and advantages.

Career Patterns. The semiskilled worker of the past and of the present has been shown, in a number of different studies, to be much more likely to have an unstable or multiple-trail career than are men in higher level occupations, and much less likely to have a stable or conventional career (Miller and Form, 1951). The semiskilled change jobs and occupations much more often than do the skilled, the clerical and sales, the executive, and the professional workers. The higher one goes on the socioeconomic scale the more stable or conventional the work history. This means that the individual is more likely to prepare for, enter, and advance in one field of work (the stable career typical of physicians), or to try one or more occupations and then settle down in a regular adult occupation (the conventional career, typical of executives). The lower the individual on the occupational ladder, the more likely he is to move around horizontally without ever climbing the ladder. The jobs that he gets and holds are often unrelated to the jobs he has held, and he tends not to hold them long. This was true in the 1920's, the period covered by Davidson and Anderson (1937), in the 1930's, the period covered by Miller and Form (1951), and it is true today as shown by the Department of Labor (1964) and by my own Career Pattern Study (unpublished data). Of course, some semiskilled workers stay on one job, as gas station attendant, textile mill worker, or auto assembly man for many years, but these appear to constitute a minority.

Vocational Education for Occupation or for Career? These facts, whether clearly or dimly perceived, are an apparent justification for not actually including most semiskilled occupations in the program of vocational education, even though these occupations are included among those for which training may be provided. When the demand for training for a particular semiskilled field, such as practical nursing and nurse's aids, is clear, the training is provided. But the focus is always on the *occupation* rather than on the person who will fill it, even though it is a person who is being trained. Thus we train thousands of power sewing machine operators who work at the job for a short time only, creating vacancies for which more transient employees are to be trained. No one seems to ask what happens to the ex-operator, to what other occupations, if any, she shifts, how she makes these changes, and how well prepared she is to make them. It seems not to have occurred to leaders in vocational education that *for the frequently changing semiskilled worker, education for a career-of-changing jobs may itself constitute the most appropriate kind of vocational education.*

The blindness of vocational educators to the needs of the semiskilled worker has, of course, been the result of the nature of the legislation providing financial support. The training provided must be for an identifiable occupation, one for which workers are needed and for which a training program can be devised. This is fine for the occupations which contain some challenge, provide some status, are reasonably free of seasonal and cyclical variations in employment, and pay moderately well. In such instances training is for stable employment. But when the occupation lacks one or more of these characteristics there is no such stability. If the training to be provided has as its objective making the individual *employable* throughout a significant part of his career, the training would not necessarily have to be *occupational.* It could include other kinds of content needed for employability, and content relevant to a number of semiskilled occupations in any one or combination of which the person might be employed during the succeeding years.

Another way of putting this is to say that vocational education should not be exclusively education for *occupations,* it should also be education for *careers.* It could then prepare not only for stable careers, as it now does, but also for unstable and multiple-trial careers, for the sequence of unrelated positions which many people occupy during the course of their working lives.

The Elimination of Semiskilled Jobs. The semiskilled worker of today is not only a person whose career is neglected by vocational education, he is one whose career is threatened by occupational trends. It has frequently been pointed out by manpower specialists that the increasing automatization of industry and business dispenses first with the semiskilled workers. Some of these may find their way into skilled occupations, upgraded by salvage and retrieval activities such as those of the Manpower Development and Training Act and company programs designed to prepare workers about to be displaced for the more demanding positions made available by the newer methods and equipment. But many seem destined to find their way only into the ranks of the unemployed.

The new semiskilled occupations to which people point as possible outlets for the displaced semiskilled who are not upgraded into skilled and technical occupations are in the service fields. To some extent these will undoubtedly absorb the potential semiskilled workers of the future. These young people will learn to manicure lawns and gardens, to carve mantel pieces and do custom millwork for people who do not want to buy one of the three stock mantels or prefabricated paneling, and to repair radios and television sets which owners don't want to scrap in the mass production style of today. They are already learning to repair cars in greater numbers than ever, as multiple car owning families increase and don't see why they should have to turn in both cars every year or even every three years. But it does not seem likely that these and other service occupations, many of which also are being automated, will increase sufficiently in numbers to provide employment for all of the displaced. What will the others do, and how will they be educated to do it?

Many observers of the contemporary scene predict a great increase in the amount and importance of leisure. The available work may be spread among more people by having them work shorter hours. Or some may do the needed work while others learn to enjoy an enforced leisure at public expense. In either case, learning how to use leisure, and how to enable leisure activities to give meaning to life as work has so far done for most people, seem destined to assume greater importance than ever. Just as the sons of knights and lesser nobles were once apprenticed to greater nobles to learn, as pages and squires the noble arts of leisure, so perhaps someday vocational education will be redefined to include education for the arts of leisure. Yes, it may be said, but not under the Vocational Education Act of 1963. Agreed. But then we must ask, do we want to be bound in preparing leaders for the field of vocational education by the Act of 1963, or even by the possible Act of 1973, in the same way in which the leaders of the past generations have been bound and blinded by the Act of 1958 and by its predecessors since 1917? I think the answer is clear: if the vocational education of the next generation may, to be effective, need to include avocational education, then we must prepare leaders who have some vision of the possibilities in this area and who can move in this direction if the situation requires it. Today's leaders, I would judge, are largely not equipped to do this.

Having now identified two major problems of the vocational education of the semiskilled, let us now consider each of them in somewhat more detail, particularly in terms of possible means of formulating and making effective their solutions.

Education for Change. Education for change implies the development of either or both of two different kinds of skills in the individual. One of these, which I believe to be the more common, denotes the training of the student in fields which are so basic that he can with their help learn whatever he needs to learn as he encounters new situations and meets new demands. This is what contemporary French educators mean when they write about "une education technique polyvalente." It is a polyvalent technical education, which results in such a firm grounding in mathematics and physics or chemistry (or all three) that the product of the training can solve unfamiliar problems, develop new methods, and adapt to changing conditions, all with greater ease than if he were a narrowly trained technician. This is what Princeton, M.I.T., Columbia, and certain other institutions have been attempting to achieve in their basic engineering programs, avoiding specialization in mechanical, electrical, chemical, or other fields of engineering. The objective is a generic engineer, who can learn to function in any of these specialties, or who can achieve his own synthesis and specialty if the field so requires.

This kind of versatility, we must recognize, is not that which can be expected of the semiskilled worker. This kind of polyvalence (if I may perpetuate that hybrid Greek and Latin word borrowed from biology by our French colleagues in education), involves a high level of ability to think in abstractions and to translate them into a variety of concrete forms. It requires, in other words, very superior intelligence. The typical semiskilled worker does not have that much academic ability. This kind of polyvalence is clearly not for him.

What is Versatility? There is a second kind of versatility which is a combination of intellectual and personality factors. It is intellectual, in that it involves enough knowledge and skill in the basic or tool subjects of English, mathematics, natural science and social sciences so that new, specific, lower-level knowledge and skills can be acquired and new situations can be understood and adapted to readily. It involves personality in that such versatility requires a flexibility, an openness to change and to dealing with change, which is at least as important in the semiskilled worker as are knowledge and skill.

The knowledge and skill components are, some of them, already being sufficiently stressed by the advocates of excellence in education: I need not dwell, here, on the importance of communication and computational skills or of physics and chemistry. My emphasis on the social sciences as basic knowledge and skill subjects for semiskilled workers may be made in a context different from that of the advocates of general education, but their arguments for appropriate work in the social sciences for all are particularly pertinent for semiskilled workers.

The pattern of unstable and multiple-trial careers which is so common in that group makes especially important an understanding of the economics, the sociology, and the psychology of industry and of work. For the semiskilled worker, dealing periodically with the need to change job, occupation, or enterprise, needs to know when to change, what to change to, and how to change. He needs to know, to find, and to use, whatever resources and data may be available to help him weigh such different variables as hourly wages, average hours worked per year, seasonality and seasonal alternatives, daily and weekly schedules, fringe benefits, management and supervision, associates, physical conditions of work, variety, freedom and pace of work, locality of employment, and inherent advantages or disadvantages of housing, schooling, recreation, and transportation. For him these variables are likely to be much more significant than the nature of the work itself, which may vary from time to time and from place to place. For him the social science of work will be much more important than the technical knowledge or skill of work, even though neither he nor the developers of the curricula of vocational education have generally conceived of these topics as vocational education. They are education for work and for careers, and hence they *are* vocational education.

Vocational Social Science. The social sciences as traditionally taught will not, of course, constitute the curriculum of instruction in the knowledge and skills of adaptation to differing types, settings, and locations of work. There will need to be more emphasis on the structure and functioning of occupations, of industries, and of organizations. Career patterns, the economics of obsolescence and automation, occupational trends and ways of recognizing occupational change, the functioning of the labor market, budgeting for seasonal and cyclical unemployment, the use of social security, public assistance, and retraining programs in making the transition from one job to another, the way of life associated with different industries, occupations, and regions are all part of vocational social science. For the miner's son leaving the hills of West Virginia for the slums of Chicago or Cleveland, knowledge of urban housing, transportation, and shopping are essential vocational skills. What good does it do him to find a job if he does not know how to use public transportation to get to and from it, and how long will he keep the job if he cannot manage his living quarters in the radically different conditions of the city? Just as in vocational rehabilitation the blind are taught travel techniques, so in vocational education the rural inhabitant needs, at a higher conceptual level, to be taught urban living. If he does not move to the city on graduation from high school the chances are that it will be because he moved there earlier, when he dropped out of school.

If the social sciences cease to be purely academic subjects and become at least in part vocational, how will they be taught in the vocational curriculum of the future? They will, we may be sure, cease to be taught largely by means of written and spoken words, by books and written assignments. Even the widely used less abstract methods of movie and television will not suffice, although they will help. There will be more and more varied use of field visits, more involvement as in organized and perhaps "made" part-time and vacation work for exploratory purposes.

The capacity to change will be developed by experiencing change under supervision. Instead of working on one cooperative or vacation job assignment the student will work on a sequence of such jobs, each different from its predecessor, each in a setting different from that which preceded it. The boy will be a jumper, a soda jerk, a wrapper, a gas station attendant, in succession. With the help of his coordinator and his classmates he will consider not only the knowledge and skills needed in each of his jobs, not only the human relations and economics of each situation, but also the problems of changing and adapting from job to job and from industry to industry. When asked to change because his work is not satisfactory, the reasons, his awareness or lack of awareness of them as they developed, the steps he took or might have taken to avoid discharge or to pave the way for moving to a more suitable position, will be reviewed.

These are all done now, to some extent, in cooperative education, but they are done incidentally to training in a particular occupation. Here they will be done for their own sakes, for training in versatility, for education which will give people stability in change. Vocational education in the secondary school will be exploratory rather than preparatory, except for work in the basic skills. The exploratory experiences will prepare the semiskilled worker for a life of change. It will also, as pointed out earlier, lay the foundation for a wise choice of specialized field in the case of future skilled and technical workers who will go on to occupational training in special institutes, in the armed forces, and in industry.

There will be, let us recognize it at once, some very real problems in the development of curricula for the semiskilled. In some instances the content and methods of instruction will be too academic, too abstract, and too unreal to challenge the interest and to maintain the efforts of the future semiskilled worker. The content will have to be developed in some areas; for example, vocational economics. Occupational sociology has to date been a subject only for college and graduate students to be used by students of human behavior or by industrial managers. Opportunities for work experience for high school students have never been easy to find, unless employers have felt a real manpower shortage. But this is something which rarely happens at the semiskilled level, the case of domestic service to the contrary notwithstanding. But these are problems which can, with imagination and motivation, at least in part, be solved.

The New Leisure Class

Historically, the leisure class has consisted of the few who, because of inherited or acquired position, were spared the drudgery of work, or who, if they worked, did so at their own desire and in self-selected ways. The fact of exemption from drudgery in itself gave people a valued role, and playing the role in a way which demonstrated one's leisured status was for many a satisfactory way of achieving distinction. Leading a band of soldiers was partly occupation, partly avocation; hunting foxes, stags, and boars was purely avocation (there are better ways of ridding farms of pests than riding pell-mell across cultivated fields); gambling, dancing, and flirting were courtly activities; and those with more intellectual inclinations could, like Montesquieu, find outlets for them in philosophy and in politics, or like Lavoisier, in chemistry and in politics.

But we are experiencing, in the second half of the twentieth century, a social revolution in which only a minority of the able and educated seem likely to have the privilege of working. Only the highest level work will need to be done by humans—all production and distribution, and many services will be performed by automated equipment. The affluent and automated society will support the ex-workers in a life of leisure which will be acceptable because it is general and unavoidable. But what roles will be open to the new leisure class? What will replace the work role which still plays so important a part in organizing and in giving meaning to the lives of most men and many women? How will men achieve the status, the sense of purpose, the feeling of competence and mastery, the satisfaction of being needed, which occupations now provide them? Not, surely, by having more time for bowling or for golf, for television or for comics, superior though these may be in social desirability to fox hunting a l'Anglaise or gambling Monegasque.

Avocational Education. In due course, therefore, vocational education may phase into avocational education. Even if work is shared or made, even if everyone works a fifteen or twenty-hour week, education for leisure will have to go hand-in-hand with education for work, and it seems likely even to replace it. But social inventiveness will be called for to develop new roles in which men and women may achieve mastery and distinction, people will need to be educated to appreciate these roles, and education will need to equip people to play them with skill and satisfaction.

We cannot, and fortunately we need not, determine here and now what the content and methods of avocational education must be. We may have some good ideas, and they should work their way into the curriculum as part of general education. But the point to be made here is that we must develop a philosophy of vocational education which is not inimical to avocational education, and we must educate leaders for vocational education who will have the social vision and understanding to respond to the need when it becomes clear and real. We need vocational educators who are truly educators.

Conclusion

I have, in this paper, discussed three challenges to vocational education, three problems which appear to me to be of major significance during the decade which lies ahead. Each of these problems has several important aspects; each confronts us with certain tasks with which we must deal.

Two of the challenges are immediate. The first of these is the need to develop a secondary educational curriculum which combines solid grounding in the basic skill and content subjects with, for the non-academic students, vocational content which makes these subjects real. This vocational content should be handled in such a way that it helps to explore the world of work, leading to decisions as to post-high school vocational and technical education. This last must itself be made more widely available and kept in tune with a rapidly changing economy by being preparatory and by leaving finishing training to industry itself.

The second immediate challenge is the development of a secondary education which meets the needs of future semiskilled workers; an education which also stresses basic knowledge and skills in ways appropriate to their ability level and interests, and which equips them for careers of change and ambiguity which are typical of the semiskilled and which will be even more common in our rapidly evolving economy.

The third and last challenge is not, perhaps, immediate, but it arises from a problem which is immanent if not imminent. This is the declining importance of work which results from the semiautomatic and automatic nature of much industrial production and recording keeping, particularly during the years ahead, the latter. For many underemployed and unemployed there is likely to be a future of enforced leisure supported by an affluent but automated economy. The average worker of today may be the leisure class of tomorrow. If so, vocational education will evolve into avocational education. We need to find out what this is, and how to provide it for people whose ability levels do not permit absorption in the ranks of the highly skilled or professional workers.

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Challenges to Vocational Education During the Decade Ahead[1]

by

Theodore J. Cote[2]

In his paper "Challenges to Vocational Education in the Decade Ahead," Dr. Donald E. Super calls the attention of vocational educators to three major areas of need in which their contribution can have significant effect. He identifies these as being: (1) the demand for skilled and technical personnel; (2) the education for work of those destined for semiskilled jobs, and (3) avocational education for those for whom work will have decreasing significance. Since Dr. Super's thoughts are presented within the context of education for trade and technical occupations this paper will limit itself to those fields.

With respect to the first challenge, the blooming public interest in the growing vocational education needs of our people has stimulated educational theorists to give considerable attention to developing programs for meeting these needs. Such programs have ranged, as Dr. Super indicates, from those which would provide "more of the same for more people" to those which recommend the wholesale removal of the vocational education function per se from the secondary school and elevating it to the position of the 13th and 14th year post-secondary education. Such a move has been and is currently taking place in the area of technical education with apparent reason. The disproportionate need for knowledge versus manipulative skill in the work of technicians as compared with that of a skilled craftsman argues strongly for a broad grounding in basic knowledges through the secondary level, with an intensified emphasis on broad applied knowledges and skill training at the post-secondary level. This would allow for the flexibility required by the technician in adapting to what his first employer regards as the nature of the job of a "technician" as compared to what other companies regard it to be.

Super, however, would apparently include skilled craftsmen as part of the same "ball of wax" and would boost preparatory programs from secondary to post-secondary education for them as well. While many advantages would accrue from this arrangement, they tend to be more administrative than pedagogical in nature. For example, while scheduling of classes would be much more convenient in a post-secondary school than in the crowded high school program, what evidence exists that a carpenter is a better craftsman with 14 as compared with 12 years of education? Whose findings suggest that manipulative skills can be learned more efficiently at 19 years of age than at 16? Again, since many youths are "ready" for vocational education at the craftsman level while in high school, is it not possible that postponing it for two or three years might aggravate rather than help the dropout problem?

Current moves to expand opportunities for training technicians in post-secondary technical institutes and junior colleges should be strongly supported. The establishment of skill training centers, removed from the secondary school and not requiring graduation from it as a prerequisite to enrollment, should be heartily endorsed to meet the skill training needs of out-of-school youth and adults. However, the point should be earnestly argued that some provision be made in the secondary curriculum for those who are *there, need,* and *are ready* for vocational skill training.

Vocational educators have long neglected to provide training opportunities for those who, by aptitude or interest, will work at the semiskilled level. While the reasons vary, the fact remains. Super takes the position that the type of training required by this group is substantially different from that required in training skilled craftsmen because of basic differences in the nature of the occupations themselves as well as their sociological characteristics. He suggests, for those who will become operatives, that the secondary school curriculum be enriched by providing for broad occupational exploration as opposed to occupational skill development coupled with basic communicative and computational skills. This would be supplemented by a new social science designed to better prepare them for the sociological aspects of work by developing flexibility and encouraging acceptance of the inevitability of change in their lives.

Since youth know little of the world of work and what it involves, this type of approach to meeting the need is highly desirable, if not necessary, and is possible under current vocational education legislation. Such a program has been in operation under the vocational guidance provisions of the Vocational Education Act of 1963 in North Carolina and more recently here in New Jersey. It is felt, however, that a student leaving school on graduation or prior to it to enter the world of work as a semiskilled worker should have something more than an "appreciation" of what work is. While the position that he should be narrowly trained in a single semiskilled occupation is questionable, it would appear that he might receive some "preparatory" training in a semiskilled occupational area such as "transportation occupations." This could be accomplished without too much violence to Super's concept by offering his program from grades 8 to 10 and moving to "cluster" training in grades 11 and 12. This would provide the student with minimal skills and should substantially improve his chances for employment in a labor force that places such a heavy value on skills.

With regard to the third challenge, the "in the mind" problem of training for leisure, Super need have little fear of vocational educators adapting to it when it is truly imminent. Since leisure, like work, is actively-centered and involves mastery of applied knowledges and skills, it constitutes an appropriate curriculum area for vocational educators. When the time comes we will be there to meet this challenge and will be looking forward to the next—hopefully with the help of innovative programs to better prepare our leaders to perceive it.

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[1] A reaction to the paper of Dr. Donald E. Super.

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The Role of Economics in the Training of Leaders in the Field of Vocational and Technical Education

by

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Economics has been defined in a variety of ways. It has been defined as "what economists do." It has also been defined as a social science concerned with the manner by which a society allocates its limited resources for the purposes of maximizing its output, that it, the utilization of its resources in the most efficient manner. A third definition is that economics is not a body of settled conclusions but rather a way of thinking, a method of analysis. On the assumption that the latter definition is most appropriate, economics can make a contribution to the training of leaders in the field of vocational and technical education. In this paper particular emphasis will be given to the broad area usually referred to as the economics of human resources, although the analytical techniques and methodology employed by the economics is applicable to all resources.

We shall be concerned with three fundamental questions. First, what will be the challenge of preparing youth and adults for the world of work during the next decade? With respect to this question there will be presented an analysis of the changes in the structure of the economy with particular reference to the labor market and some projections of the labor force to the year 1975. The second question is: How does the economics of human resources relate to the problem of man, education, and work, and what contribution can it make to the development of leaders in vocational and technical education in terms of content, experiences, and techniques? With respect to this question there will be presented a discussion of how economics can be applied to the field of education in general, and in vocational and technical education in particular. The third question is: How can the leadership of vocational and technical education best be prepared by such processes as internship, research, etc.?

The Challenge of the Next Decade

Significant changes have taken place in the broad area of governmental economic policy, the composition of the labor force, the character of unemployment, and in the technological structure of the economy. Each of these changes has had, and will continue to have, profound impact on the world of work and in turn should affect the education and training of leaders in vocational and technical education.

Governmental Economic Policies

With the passage of the Employment Act of 1946 there was general public understanding and acceptance (at times, reluctant) of the idea that governmental fiscal policy was essential when the economy encountered either a recession or an inflationary situation. Such a policy involved either tax reductions or increased expenditures during periods of recession, and tax increases and decreases in governmental expenditures during period of inflation. But this economic policy was nothing more than a reaction to a series of economic events. It was learned after bitter experience, particularly since the end of World War II, that with this type of fiscal policy the economy continued to encounter a number of serious recessions.

During the past few years there has developed a new type of governmental economic policy, particularly in reference to taxation and governmental expenditures. It was recognized that during periods of expansion, as the economy grew, the income generated by this growth would yield increased tax revenues. These increased tax revenues could be a "drag" on the economy, since they did not allow the expansion to reach a maximum. Thus, there has evolved a policy, which began in 1963, that recognized that as the economy grew in terms of employment and national income it would be desirable either to reduce taxes or to increase governmental expenditures. This new approach to fiscal policy will result, it is hoped, in an economy which will be able to maintain a high level of employment without experiencing serious recessions every several years as we experienced for the decade after World War II.

It is not necessary for the purposes of this paper to explain or to examine in detail this policy, but it is important to indicate that we are now following economic policies which will tend to maintain high levels of employment and to generate economic growth in the economy. Thus we can face the future with reasonable assurance that for many years to come, the economy may be operating at close to full capacity.

In this type of environment the ability of youth and other workers to obtain jobs will be greatly enhanced. Obviously, the demand for labor will be exceedingly brisk and such conditions will permit a high degree of mobility of labor, whether it be geographical, occupational, or industrial. If this is so, it seems that the training of youth for this type of world of work might well be different from the training of youth for a world of work which experiences periodic economic fluctuations and inadequate economic growth. It is essential that the leadership in education in general, and in vocational and technical education in particular, have knowledge and understanding of this type of economic policy. They should be able to translate the impact of this change in economic policy upon the programs which are developed in the vocational and technical high schools. Whether or not this economic prediction is fulfilled, the fact remains that leaders in the field must be aware of the implications of these various types of policies so they can be translated into their educational programs.

Composition of the Labor Force

During the past decade there have been, inter alia, two significant changes in the composition of the labor force. One has been the large number of workers employed in service industries in contrast to manufacturing industries. In fact, in the early 'fifties the number employed in the former category began to exceed the number employed in the latter category. The other significant change was the increasing proportion of workers engaged in nonproduction work. This is a reflection, in part, of the increased emphasis on research and development.

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On the basis of projections made by the U. S. Department of Labor it is anticipated that these trends will continue. We shall also discover that within manufacturing significant shifts will be taking place in employment among the various industries. With this changing character in composition of the labor force, it would seem reasonable that the leaders in the fields of vocational and technical education reexamine the educational curriculum which is being offered in vocational education, both in the high schools and in the post-secondary schools, for the purpose of adapting it to these changes.

In the past it was not unreasonable to assume that workers would be engaged in one occupation and even attached to one employer for their entire lives. Today, it is anticipated that youngsters going into the labor force will face five or six job changes in a number of occupations and/or industries during the entire course of their working lives. These changes in the composition of the labor force takes place from year to year, and the projections are constantly being adjusted as new knowledge comes to those persons who make the projections. Therefore, it is essential that the leaders in the field of vocational and technical education have the ability to study, examine, and analyze these changes in the composition of the labor force so they are in a position to adapt the curricula in the school systems in order to meet the needs of the youth as well as the needs of employers.

Character of Unemployment

In recent years economists have been engaged in great debate as to whether or not the unemployment which has persisted over the years is a function of ineffective demand or is structural. If it is assumed that unemployment results from ineffective demand, then the public policies followed would naturally call for tax reductions or increased governmental expenditures. If, on the other hand, the character of unemployment is structural, then these fiscal policies will not be able to absorb the unemployed into the labor market. Rather, what would be called for is increased expenditures in the field of education, training, and retraining. It is not the purpose of this paper to get into the debate as to whether or not the unemployment is a result of one factor or another. It is not unreasonable to state that governmental policy designed to minimize the rate of unemployment would have to follow both directions.

It would seem to me that leaders in the field of vocational and technical education should be competent to understand this type of debate and to develop programs to meet these particular needs. It is also important that these leaders understand the structural unemployment which does exist. For example, there are many who contend that tax policy cannot absorb certain types of unemployed and that even certain types of our manpower training programs cannot meet the needs of the unemployed. We find, for example, large numbers of youth who are unemployed have no skill, and do not have the abilities to learn a skill. We find other groups who are displaced as a result of technological change and because of age, or lack of education, do not have the basic abilities to develop new skills in new jobs which will pay them at least the wages to which they have been accustomed. We also find that nonwhites face various handicaps, some of which reflect the inadequacy of vocational education.

To what extent must the leaders of vocational and technical education develop appropriate programs to meet these particular problems? Here too, it is essential that these leaders be trained to understand the changing character of employment for the purpose of developing techniques to meet these demands.

Another area in which there will seem to be some elements of hidden unemployment is the area of woman power. Here we find many women, after a number of years of child-raising, who are interested in returning to the labor force either on a part-time or full-time basis. To what extent have we been able to develop programs to meet the needs of these women?

Changing Technology

Probably the most significant characteristic of our economy today is its rapidly changing technology. We may well discover that tomorrow's jobs will not require today's skills. In the education and training of youth it is essential that they be prepared for the future and not the present. Thus, leaders in education should be equipped to understand the implications of the changing technology and translate them into the curriculum.

The ability to perform this function will stem from education and training in the social sciences and not from education and training in narrow skills. It is suggested that new methods and curricula in the education of youngsters must be found if the youngsters are to be prepared adequately for the world of work.

The Relationship of Economics to the Problem of Man, Education, and Work

As indicated earlier, economics can be considered a discipline which stresses methods of analysis. It is, in effect, a way of looking at particular problems.

Economists, for example, generally stress the fact that man has unlimited wants but must use limited resources in order to satisfy these wants. Therefore, we are constantly faced with the problem of allocating our resources in such a manner that the net result will maximize the goals of our society This means that citizens constantly must make decisions between alternative approaches to their problems. There is general recognition, for example, that man has an extensive list of long-range objectives. We frequently discover that not all of his objectives can be achieved. One must be made subordinated to another. What differs among us all is the fact that we all have a different order of priorities.

We utilize in economics the concept of "opportunity cost," which can be defined as the cost attributable to doing one thing rather than another. This concept derives from the notion of foregone opportunities that have to be sacrificed in doing this one thing. Related to this concept of cost is, of course, the benefits derived from this investment in a resource. Thus, cost-benefit analyses, with which economists have been increasingly concerned in recent years—with particular reference to education—can be exceedingly useful to educational leaders.

It is fair to state that at the present time the Federal government is engaged in large expenditures in the field of education. We have expenditures for elementary and secondary education as well as higher education. We have expenditures for vocational education as well as expenditures to assist low income groups. We spend money for training and retraining of youth and other workers. The real question confronting any educational decision maker is what is the most effective way to spend this money. This means that we must be concerned with the question of whether or not the benefits—both private and social—derived from a particular expenditure exceeds or does not exceed that particular expenditure. In addition, we would like to know whether or not an expenditure in one direction would yield a greater or lesser return than expenditure in another direction.

Economists recognize that education plays an important role in the understanding of earning differentials, income distribution, the incidence of unemployment, etc. There is also recognition that an education is not only a consumption good but also an investment good. This means that if we decide to invest in education we may discover that it yields returns considerably above those investments in other forms.

Many educators have resisted the interest of economists in the field of education. Such resistance reflects a misunderstanding of the role that economists can play in assisting the educational decision maker on policy questions. Some educators think that economists make judgments on the wisdom of expenditures on education in pure money terms and that efficiency becomes the sole objective. Other educators think that education is "good" regardless of costs and, therefore, there is no need to examine the whole question of costs and benefits. Let us examine these two views briefly.

Economists start with the assumption that the educational decision maker is faced with a limited amount of financial resources and, therefore, faces the decision of allocating the scarce financial resources among a number of desirable objectives. It is not the function of the economists to set the educational goals of the society, but rather to indicate the costs of and returns from alternative decisions. Nor does the economist ignore the noneconomic factors, but he may suggest ways and means of quantifying these factors. In general, the economist can discuss questions of feasibility, efficiency, and consequences of alternative types of educational decisions. Inputs into the educational system are measurable and even some of the outputs are measurable. But just because certain results of education—cultural and spiritual—are difficult, if not impossible, to measure does not mean that we should not concentrate on these benefits of education which are measurable. Failure to take these cost-benefit factors into account *explicitly* means that they are considered *implicitly* on a set of assumptions unknown to the decision maker. Some of the questions with which the decision maker in vocational education should be concerned might include:

(1) Does the investment in vocational education yield the return greater or lesser than an investment in an academic education, assuming equal costs?

(2) Is it better to invest money in teacher training or in the physical facilities of the schools?

(3) Which particular programs in the field of vocational education yield a greater return?

(4) What types of curricula yield a greater or lesser return, assuming equal costs?

(5) What will be the demand for various types of students at different educational levels in 1970, 1975, or 1980? Within a given educational level what will be the demand for graduates with different types of education, including the field of vocational and technical education?

(6) What types of skills are required in the future, what effect will technological change have on these skills, and what new skills must be developed?

These questions are simply a sample of the types of questions with which a vocational leader must be confronted. In order to answer questions of this type it is essential that he be well trained in a field of economics, or at least have an understanding of this field, so that he could communicate with economists who can conduct studies for him and provide the answers for him. In any event, it is important that the educational leader has a full appreciation of the role that economics can play in assisting him in making significant decisions in the field of education, with particular reference to cost-benefit.

The Preparation of Educational Leadership for the Administration of Vocational and Technical Programs

It seems that the entire stress in the education of persons who will eventually administer vocational and technical programs should be shifted from that of technique to one of a broad education in the various social sciences, including substantial training in research techniques. It is recognized that we live in a highly dynamic society in which technological change is constantly taking place. This means that any educational leader in vocational education should have a full understanding of the dynamic character of our economy, and the impact this has on the development of curriculum, the training of teachers, etc., in the field of vocational education. The leader should be in a position to read and understand the contributions made by economists in these areas as well as to interpret them and to apply them to their various programs. This can result only if he has training in research and has the competency to evaluate the research of others.

Vocational educators should rid themselves of the notion that people who play a leadership role in vocational education must come out of the shops. Rather, such a person should have a broad liberal arts background, including a great stress in the area of the social sciences. Although this paper is concerned solely with economics, it is obviously desirable that such educational leaders be well-grounded in the fields of psychology and sociology. Probably one of the great weaknesses of the leadership in vocational education today is that these leaders have a limited understanding of the society in which they live and a limited knowledge of the influence of social, economic, and political forces on the lives of peoples. Without such understanding and knowledge it seems that it is impossible for them to provide the leadership necessary to change the whole direction of vocational education.

The leaders in the field of vocational education have also been exceedingly narrow in their approach to the training of youth for work. They have concentrated generally on the higher quality student who is capable of going through a vocational education program for the purpose of acquiring a specific skill. They have tended to ignore those youngsters who do not have the abilities to go through either an academic program or a vocational education program. These are the youngsters who go forth into the world of work and seek a certain semiskilled job. We find these limited skills being constantly outmoded and the requirements changing. To what extent should the vocational education turn its attention to this group of youngsters? Should they not be preparing these youngsters for training in certain occupational clusters rather than specific skills? Should not such training include a knowledge of the work environment into which these youngsters would enter?

Conclusion

Some effort has been made in this paper to indicate that leaders in the field of vocational and technical education should have training in the field of economics so that (1) they can understand the implications of a dynamic society which call for new skills; (2) they can develop the appropriate curricula to meet these new demands; (3) they are capable of making intelligent decisions among the many demands which are made for funds for programs; (4) they are competent to develop and understand research conducted in their areas in order to develop appropriate vocational and technical education programs.

The Role of Economics in the Training of Leaders in the Field of Vocational and Technical Education[1]

by

Herbert Levine[2]

Dr. Kaufman sets a high goal for vocational education by suggesting that "the vocational education leader should be in a position to read and understand the contribution made by economists. . . ." Granting Dr. Kaufman's underlying assumption that an educated man *can* understand economics, he does make a good case for the role of economics in the training of leaders in the field of vocational and technical education.

Vocational education can be a four-year mishap—an interim between childhood play, unproductive manhood, and adult idleness. Billions of dollars can be spent training youth for permanent unemployment. This would be a calamity for the individual and for the Nation.

Dr. Kaufman quite properly asks, "What will the 'world of work' look like? If one cannot deal with this question with any modicum of success, how does one know what to train for and teach about?"

Dr. Kaufman tells us that "Significant changes have taken place in the broad area of governmental economic policy, the composition of the labor force, the character of unemployment, and in the technological structure of the economy. Each of these changes has had, and will continue to have, profound impact on the world of work and in turn should affect the education and training of leaders in vocational and technical education." Regardless of whether or not Dr. Kaufman's economic prediction is fulfilled, and there are many who differ, he correctly states, "The fact remains that leaders in the field must be aware of the implications of these various types of policies and changes so that they can be translated into their educational programs."

Dr. Kaufman suggests that the education of persons who will eventually administer vocational and technical programs should be shifted from that of technique to one of a broad education in the various social sciences, including substantial training in research techniques. He raises the question whether there ought to be a liberal arts program for vocational education practitioners or whether it might not be more profitable to graft onto vocational education graduates of the regular liberal arts degree. He makes a valid point by claiming that leadership at all levels of our society, be it in education, government, business, or trade unions, needs to be capable of thinking through the broad conception which must underlie any successful social planning. However, I have a tendency to like the idea that leadership in vocational education ought to, as often as possible, come out of the work experience area, which, in the coming years, will be somewhat divorced from what we now call the shop. It would appear to me that some sort of marriage of shop and academia, some intelligent relationship of the broad conception to the techniques and skills of production in the work place needs to be made.

We have so compartmentalized education that the seat sometimes has contempt for the legs. Perhaps some sections of academia need a liberal education about the nature of man, his capabilities, and his works. Whitehead tells us that a people that does not value trained intelligence is doomed. Perhaps we need to revise our system of economic and other values. Why does one man receive $5,000 per year for an occupational service and another $12 or $50,000? What is a fair price for a carpenter? Shall we train people to work in the glamour industries, on new metals for space travel, or prepare them for lower paying, currently considered lower status jobs? How will the decision be made? On the color of skin? How much work does our society need to be done? What kind of work? How many people will be involved? How many hours of work?

Can we develop a relationship between the school, the work place, and leisure time which can make vocational and other education contribute their values to our society?

Does vocational education have any responsibility beyond the high school—not only for its own professional value, which is under discussion at the moment, but for the millions of Americans whose world of work is changing at such a chaotic rate? Does not vocational education suffer from the concept of a finished four-year program? Can it be geared to meeting the needs of continuing vocational education?

Is it possible that as vocational education develops into the maturity of high quality professionalization through courses of study leading to the doctoral degree it can make a contribution to the national dialogue on the purposes and character of our American educational system? Perhaps we can rivet once and for all time the marriage of ideas and action required to develop the forces of production and the people who manipulate them in such a way so that there can be plenty for all in modern society.

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[1] A reaction to the paper of Dr. Jacob Kaufman.

[2] Dr. Levine is Director, Institute for Management and Labor Relations, Rutgers - The State University.

A Doctoral Program in Vocational Education as a Behavioral Science

by

Daniel Katz[1]

The Educational Challenges of a Changing Society

The most dramatic problem we face today, and will continue to face for the foreseeable future, is the unprecedented rate of change in the technological and scientific aspects of our society. It is not change as such but the exponential rate of change which has affected our social institutions. Every year over 1,200,000 articles appear in the 60,000 scientific journals in addition to about 60,000 books and 100,000 research reports. Scientific and technical publications have doubled in number in the United States approximately every twenty years since 1800. The information explosion has been paralleled by a transformation of the industrial base of our society both in processes of production and in processes of communication and organization. The earlier shift was from a stage where the bulk of the people were in primary industries of farming and mining to a period where the majority were employed in secondary industry of manufacture. The present shift is from secondary industry to tertiary industry of service, sales, and communication.

We are in fact just beginning the technological revolution which promises to go wider and deeper than the industrial revolution. The industrial revolution was basically the application of technological folklore to productive enterprises. Such knowledge as the discovery of steam was harnessed to the steam engine. But the development of scientific theory and principles was in its infancy as were its applications. Today, however, we are putting to work the vast armentarium of science to transform our society.

Against the general background of exponential change, of technological mutations, and of institutional rearrangement, the education of future citizens must be considered. Though an accelerating rate of change makes prediction difficult, it should be possible to draw some general inferences about present and future educational policy.

Perhaps the most general conclusion that can be reached is that the leaders in technical and vocational education can no longer follow their specialized and narrow roles. They must be trained in doctoral programs which are as broad and deep as the other disciplines. They must be both specialists in vocational education and behavioral scientists as well. This is necessary because they must be able to understand and assess the trends of environmental and social change. They must be so trained as to be competent consumers of behavioral science research if not researchers themselves. They must be able to comprehend the complex interrelationships of our social system and its many component subsystems and to appraise system change in terms of new inputs and resulting organizational modification. They must be able to relate their own profession to industry, to government, and to education in general. They should be able to conceptualize the new emerging relationships and set new goals for their field.

The challenges which will face us in preparing youth and adults for the world of work can be examined in terms of the new demands created by a changing society for the roles people will be expected to assume. These demands can be considered in the broad framework of five types of capacities: (1) technical skills, (2) social skills of relating to others, (3) adaptive personality traits, (4) conceptual skills, and (5) the ethical or moral orientation of the person. (Vocational education does not, of course, stop at the first level of technical skills.) The continuing changes in our society are affecting the nature of the skills expected at all five levels.

Technical skills. The technical skills are increasingly less particularized with respect to mastery of a specific technique or a bit of technical knowledge. Nothing is outmoded faster than such phenotypic competence. What is necessary is more generalized skill, more understanding of the basic principle involved to permit of ready transfer. In some ways this means a return to the type of generalized ability of the old craftsman save that the generalized skill he possessed is not identical with the ability needed by the operator in an automated plant. The new technical skills will increasingly call for the ability to see the relationships between measures, whether dial readings or sets of signals—a ratio-minded rather than an absolutistic approach. Increasingly, too, there will be the need for appreciation of various kinds of decoding and encoding processes. Psychological research on the nature of these general technical skills, on their degree of transferability and on their teaching can play a major role in bringing about curricular revision. Programmed learning, for example, has already demonstrated its efficacy for the teaching of such general technical skills.

Social skills. As more and more jobs shift from the factory to the office, from direct production to marketing and service, the job description will include the ability to relate to others in effective fashion. Not only is the content of jobs changing but the whole culture is moving toward a greater people-orientation. Today we even expect physicians to treat their patients as people capable of some understanding. Industry has long recognized the clerks and other personnel dealing with the public should so act as not to antagonize their clientele. Within an organization, moreover, the employee's relation to his fellow employees and to his supervisor is an important variable making for the success of the enterprise and the satisfaction of its members. The inference is clear, then, that increasingly social skills will become necessary for the carrying out of the job successfully.

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Thus far sensitivity training, T-group experience, and courses in group dynamics have been restricted in good part to managerial personnel. There is no reason for this arbitrary restriction, however, for the rank-and-file employee also has a need for such training and also has considerable capacity for profiting from it. In time such courses will be required of students in the graduate program in vocational education and some basic training of this type needs to be pushed down into the vocational secondary school. Again research is needed to translate training programs successful at the adult level into courses in the secondary school.

Adaptive skills. If technical skills are learned at a general level and if social skills are also required, the individual already has moved toward the development of his adaptive capacities. By such capacities we refer to the general ability to handle both success and failure experiences without undue impairment of functioning. The need for the development of this type of capacity will become greater as we move into more and more automation, which will make obsolescent some of the individual's old job skills and habits. He will have to assume a new and different role. The shift will be met in part by his generalized technical skills, but in addition the individual with internal resources, with high ego strength, and with a high degree of coping behavior rather than defensiveness will be at a premium in making such adjustments.

Though there is some research on ego strength and coping behavior, there are great gaps in our knowledge on adaptive capacity and its development. Yet we do know some things which should be in the hands of vocational and elementary teachers. Specifically, it is important to attempt to develop realistic levels of aspiration in children through adjusting their success and failure experiences to their efforts and their performance. It has been demonstrated that children who are high need achievers tend to take risks at the intermediate levels of the scale and to avoid extreme shifts in their aspiration level from task to task in the same series of performances. In other words, they realistically appraise their goals in relation to probability of success. Negro students who have perceived little relation between their own efforts and success in the past do not adapt to the shifting objective return but will follow the gambler's pattern in risk taking as if the outcome were out of their control.

The findings of the many experiments in social psychology on risk taking, ego strength, and adaptability cannot be communicated directly to the vocational teacher at the elementary or secondary school level very effectively by the social psychologist. This is one of the tasks for the graduate of the doctoral program in vocational education. It should be added that adaptability is closely related to problems of motivation and of school dropout. It has been demonstrated that the dropouts are generally the students not making the grade academically.

Conceptual skills. In the past we have generally considered conceptual skills to be the domain of those who go on to academic and professional careers. Automation is not only tending to eliminate lower level management jobs; it is also replacing the robot of the assembly line by a worker responsible for watching a number of instruments. Though there may be less of a sharp break in the future between the hourly and the salaried worker in the use of conceptual skills, there is the problem of the tremendous advantage enjoyed by those with advanced mathematical training. Vocational education for the future may have to give major attention to the methods of introducing more mathematical training into its curriculum. Mathematics is the major conceptual tool of an automated society.

Ethical orientation. Two major factors are leading to an increased concern with traits of character in industry.

(a) In an automated plant the worker often assumes a degree of responsibility of major proportions. He has under his surveillance fantastically expensive equipment. Absenteeism, carelessness, and irresponsibility tolerated in the old factory are no longer permissible in the automated set-up. Manufacturing concerns, as they automate, screen their workers on character traits of stability, responsibility, and morality. Deviation from ethical norms of temperance, for example, are too risky to be afforded.

(b) A second major factor is the growth of a democratic ethic in our organizational society which recognizes the essential dignity of the human being as a person, the need for equality of opportunity for people of all races and creeds, and the desirability of involving people through active participation in the structures in which they work. This growing democratic ethic, like the forces in automation, creates more emphasis upon the character traits of the individual. The cooperative rather than the antagonistic personality, the socially-minded rather than the egocentric individual, the democratic rather than the authoritarian character are essential to the operation of most modern organizations.

Just as social skills are going to be more and more a recognized part of job descriptions, so too will traits of ethical character be considered in the employment of people. And again the horizons of the vocational educator may need to be expanded to look into ways in which vocational training must include the whole person.

Suggestions for a Doctoral Program in Education

These suggestions are directed at broadening the training of the doctoral student and will not attack the specific skills of specialized vocational education. The assumption that is made is that Ph.D.'s or their equivalent in education should not differ fundamentally from other behavioral scientists. It is true that the particular problem area may differ somewhat but the basic methods, the basic concepts, and the basic processes are the same. Just as social psychologists collaborate with political scientists in studying political parties and electoral behavior because they are dealing with the same generic processes, so too can sociologists, psychologists, and educators work together on problems of training and socialization. The following suggestions are made, however, from the perspective of my own discipline, social psychology. They propose core training in five sub-areas which are not only the most relevant for the educational challenges confronting us, but which are also basic areas in social psychology itself. They are: (1) research methodology, (2) human learning and performance, (3) group dynamics, (4) personality and motivation, and (5) the social psychology of organizations.

Methodology. The new doctoral program should include a total of at least three one-semester courses in statistics, measurement, and research methodology. The objective should not be to turn out full-fledged researchers, but rather to produce sophisticated consumers of research. In other words, the graduates of the program would not only be in a better position to evaluate research publications, but they would be able to utilize research findings and to know when to call upon researchers to deal with specific problems. The objective is thus to go beyond the conventional methods course. The three-semester training, moreover, should furnish the basis for the student doing research dissertation of a limited character.

Ideally there should be enough freedom in the doctoral program for the student who wants to receive more training in research methods to take advanced courses in this area in the social science departments. Where students have had the equivalent of one or more of these three courses, the requirement could of course be waived.

It should also be added that the research methods course should include both lectures and a practicum. The practicum would not consist of carrying through a complete research project. This is time consuming and often restricted in the experience gained. Rather, the practicum sessions would be spent in actual experience with the many techniques of social research. For example, students could be given protocols from need achievement tests to score, they could be afforded an opportunity to code their observations of behavior, they could conduct some interviews, draw a sample, etc. The purpose would be to give them some experiential content for the principles of methodology discussed in class.

Human Learning and Performance. Two one-semester courses in the experimental psychology of learning and performance would add considerably to the student's knowledge of fundamental processes of learning, of generalizability of skills, and of factors affecting performance. The performance course could deal with man-machine systems and information processing. These courses would assume previous work in courses in educational psychology and an elementary knowledge of statistics.

Group Dynamics and Interpersonal Relations. Two one-semester courses would be valuable in this area. The first could deal with group experimentation, basic group processes and their utilization for problem solving and attitude change. The second could be a practicum involving sensitivity training and T-group practice. Ideally, the two courses could be reduced in credit and run concurrently during the year.

Personality, Character Development and Motivation. Again, two one-semester courses could deal with the socialization process as it affects personality development, the nature of defense mechanisms and coping behavior, personality change, and the character of motivational patterns and their modifiability.

Social Psychology of Organizations. A one-semester course in the nature of social systems and their informational and psychological inputs. An open system approach could be utilized and the objective would be to give understanding of the functional and dysfunctional aspects of organizational structures. Processes of organizational change affecting complex interlocking role systems could be given major emphasis.

Internship Experience. Students would be expected to spend half-time for a full year in an internship in some on-going enterprise, e.g., some change program in a vocational school, some industrial innovation of in-service training, some action research project, etc. This experience would be under the supervision of a staff member and students would meet in a seminar once a week to discuss their experiences.

A Research Doctoral Dissertation. It is proposed that students still be required to submit a dissertation based upon their research, but that the requirement be made more realistic by abandoning the old criterion of a significant original contribution to knowledge. Instead, the requirement would allow for a replication of older research or a piece of a larger research project. The objective would be to develop thorough understanding of the research process rather than to insist upon a new contribution to knowledge.

The five suggested series of courses would comprise thirty hours of work or the equivalent of two full semesters and a summer, i.e., one full year of graduate study. This program would greatly enrich the student's background and enable him to deal more effectively with the challenges described above for vocational education. It would still leave time for relevant graduate work in economics and in education.

It is also suggested that the pattern of graduate education be flexible in that a student who gets excited by one of the five areas described above be permitted to take more advanced work in this area. The thirty hours gives a broad orientation and some coverage of five important sub-areas. In addition, however, he may want to develop and integrate materials in one of these sub-areas with materials in a problem area of vocational education. For example, he could go on to advanced work in learning and performance to apply concepts of man-machine systems to curricular changes and do his dissertation on some phase of the problem.

Implementation

One way of handling the problem of maintaining quality in the courses suggested is through a cooperative program with psychology and sociology. At The University of Michigan we have a joint doctoral program for educaional psychology supervised by a committee with representatives from the School of Education and the Psychology Department. Students in this program take a number of the courses required of all psychology graduate students as well as some courses in education and some courses specially designed for them. Similarly the School of Social Work has instituted a joint doctoral program with the social science departments. Their students can elect to make the program a joint one with either psychology, sociology, social psychology, or economics

The advantages of such joint programs are great. They take advantage of the strength and resources of the existing social science departments, and this is important at a time when it is difficult to recruit a new staff of social scientists. Students involved in the joint courses are mutually stimulated. It is a challenge for students from social work to come into our department for a course with our students, and they respond with effort and enthusiasm. Moreover, it helps to recruit first-rate students if they know they will receive degrees in such a joint program. Finally, it brings together social scientists and professional staff members and destroys the myth of the independence of their areas of work. Altogether, our experience with joint programs has been highly rewarding to staff and students alike. The proof of pudding is in the products turned out. These new Ph.D.'s have gone on to important posts in professional work, in research administration, and in the academic community.

Of the courses outlined above, the last four could be joint courses with psychology. The first one on research methodology could also be a joint course, but it should be designed to take account of the needs of graduate students in education. On the other side of the ledger is the advantage of more specific tailoring of the courses for education students if they are not joint courses. The decision, of course, about the wiser policy is dependent upon many factors.

Finally, a few words are in order about the roles these new doctoral students could assume after graduation. They would be in demand for governmental posts in vocational education at the national, state, and local levels for administrative-professional positions. Their knowledge of research procedures and their broader social science training would be welcomed. Some of them would move into research administration, others into action roles. Another role open to them would be in university settings in schools and departments of education. Even where new doctoral programs are not instituted, these graduates would be highly acceptable within more traditional frameworks. Industry, too, would compete for the products of a doctoral program in vocational education. We have many requests from industrial enterprises for graduates of our doctoral program in social psychology, but with a few exceptions most of our students are so remote from industrial problems that they have preferred to remain in the academic world. Students, however, who already are interested in practical issues of vocational training may well be attracted by the opportunities of making a contribution in an industrial setting. Finally, a few would become research specialists and carry out some of the many research projects which will multiply in the years ahead.

Running through a number of the posts which these people may move into is a rather new role—that of the change agent or social engineer. These people will be leaders in vocational education because they can bridge the gap between the social sciences and the practical problems of educational change. In the physical sciences we have developed similar action roles: the engineer applies knowledge from the physical sciences, the doctor applies knowledge from the biological sciences. At the present time there is no similar group which serves as a bridge between the social sciences and the preparation of youth for the world of work. Your new doctoral program can be the beginning of a profound change in the character of vocational education.

A Doctoral Program in Vocational Education as a Behavioral Science[1]

by

Bernard P. Indik[2]

It is rare that a former student is given the opportunity at a later date to react to current thoughts and insights of one of his favorite professors. I think that Professor Katz's insights are as penetrating on today's topic as I thought they were some years ago on many other topics. This morning I hope that first I may be able to amplify and add to his suggestions and discuss the relevance of them, and second, to suggest how they may be implemented within the structure of Rutgers' other graduate training programs.

Professor Katz points to several major trends of changes that should affect the design of a graduate program in vocational education. They include:

1. An exponential rate of change in the technological aspects of our society
2. An exponential rate of change in the scientific information available
3. A basic shift from a society that was primarily a manufacturing employer to one that is primarily a service industry employer. I should like to add three more trends:
4. A continued trend in our ability to produce more and more goods and services per employed hours spent
5. A trend toward the development of new teaching techniques
6. A trend toward a long run focus of attention on the problem of adaptive vocational training specifically adapted to the needs of the disadvantaged

Accepting these basic trends, what do they imply? All of these trends imply that we need to provide a broader spectrum of course materials and the skills necessary to teach them to our vocational education graduates. We need to broaden their horizons as to what is the full spectrum of courses that should and need to be taught. Associated with this we need to give them the tools to use to enable them to evaluate the situations they will face so that they can adaptively plan, develop, and coordinate the programs of courses that are necessary to aid and smooth the large number of transitions the individuals of our society will be facing in the future.

In order to do this effectively our vocational education leaders will need to increase their knowledge and awareness in economics and economic analyses methods, sociological research and occupational and industrial sociology (this course exists as a *Seminar in Industrial Sociology*, 920:631, 632), course programming and administration and new techniques in teaching, in addition to the courses suggested by Professor Katz.

Specifically, because of the second major trend, i.e., the scientific information explosion, I agree that one of the major focuses of this doctoral program should include the three one-semester courses in research methodology (statistics, measurement, and methodology) with the objective of producing sophisticated consumers of research in the social sciences and education. By the way, these three courses already exist in the framework of the course offerings of the Graduate School of Education. They are now *Introduction to Statistics and Logic* (290:511), *Educational and Psychological Measurements* (290:501), and *Introduction to Research Methods* (290:611) in that order.

With the growth of the need for new courses to be given by vocational educators in new areas there is a need to develop new skills which adapt these educators to develop these courses and teach them effectively. The sequence of courses in this area suggested by Professor Katz should help. They include *Human Learning and Performance, Group Dynamics and Interpersonal Personal Relations* (given at Rutgers as 830:570, *Seminar in the Dynamics of Group Growth, Seminar in the Dynamics of Small Groups* (830:507), and *Personality Character Development and Motivation.* (There are two courses from our program of courses suggested for a proposed Graduate Program in Social Relations that might fit here. They are a *Seminar in Social Motivation* and a *Seminar in Attitude Development and Attitude Change.*)

Professor Katz also suggests the need for a course in the *Social Psychology of Organizations.* (This is also a course that has been proposed for the above mentioned Graduate Program in Social Relations.) I think the justification for inclusion of this course is also well founded.

Further course work seems to me necessary to meet the special needs of the disadvantaged or whatever the current focus of attention might be. Here one might include a *Seminar in the Social Psychology of Poverty* in order to develop in a new breed of vocational educators some detailed knowledge of the perspectives, perceptions, motivations, and life styles of the poor, and also an *Experimental Seminar to Develop Teaching Techniques Adapted for the Poor.* At some point in the future these seminars might deal with different focuses of attention which are adaptive to untended social and educational needs such as in *avocational training*—a need implied by trend number four.

In order to build the caliber of persons I would like to see as the output of this program, I also feel it is necessary to have the type of internship and research doctoral dissertation process that Professor Katz has suggested.

Now we come to a rather crucial point which is that over and above the program that has been specified above and the joint Vocational Education and Behavior Science Faculty that is necessary for its functioning; it is necessary to attract and select the high quality of students necessary to accomplish this prodigious program of graduate studies. I think it is also necessary that these students be full-time students in this graduate program so that the full focus of their attention can be given to their studies and related activities for at least a two-year period, so that the basic core courses and qualifying examinations can be completed in an atmosphere that allows the development of norms that reenforce and strengthen usefulness of the roster of skills, information, experiences, and values of the proposed program.

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[1] A reaction to the paper of Dr. Daniel Katz.

[2] Dr. Indik is Associate Research Specialist in Psychology, Rutgers - The State University.

As I visualize it, the program here suggested is such a large step away from present programs that this kind of approach might be necessary. It is necessary that students completing this program of new approaches be able to gain the new perspectives so as to more effectively refocus vocational education for the future.

Work and Education: The Problems Facing Us

by

Richard F. Hamilton[1]

For all its importance, we have remarkably little information on the "world of work." This is most clearly the case with analyses of the labor force and most especially with projections of the shape of the labor force in years to come. It is, after all, an estimate of the likely shape of that labor force of the future which should provide the basis for current planning and training. Such projections need not (and should not) be mere extensions of the recent trends (that is, a judgment which anticipates no more than a continuation of the current drift of events), but can and should be "informed" in the sense that they are "corrected" in the light of expected changes in consumer demands (by both public and private consumers) and investment decisions. There ought to be, in addition, at least the consideration of planned options based on desired end results (as opposed to mere drift).

Among the kinds of information we do *not* have (or where we have only the barest outlines) are the following:

1. We do not have adequate information on the kind and quantity of jobs which will be available a decade from now. It will be objected that here we do know; we know there is a shift to the tertiary sector, that there is a shift from manual to nonmanual jobs, there are more managerial, clerical, professional, and service jobs, etc. My points are two: that this "charting" is sweeping and general, offering little in the way of detailed guidelines, and, that this projection is based on past trends. There is good reason for believing that the coming of factory and office automation will drastically alter those trends. How they will be altered is a question which, for the most part, remains wide open.

2. We do not know the detailed skill requirements of the jobs which will be available a decade from now. Beyond the cliché—"increasing skill requirements"—(which may not be accurate), we have little information to guide us.

3. We have only limited information on alternative ways for organizing work so as to achieve a given quantity and quality of output. Aside from possible savings in money costs, there is likely to be a large range of noneconomic side effects which would prove of great interest in assessing procedure. The information on alternative procedures is of obvious importance both in the construction of estimates of job needs and in planning of vocational-technical education.

Lacking these kinds of information, we will have to make our own projections.[1] Our suggestions based on these projections will leave room for flexibility in planning. One of our aims is to leave possibilities open rather than making decisions which determine or foreclose subsequent choices.

Let us begin with the skill requirements assumption since this is of most immediate relevance to our concern, that is, to vocational-technical education.

Since the publication of the *Wealth of Nations* in 1776, which focused on this matter, only a few basic positions have been elaborated. Discussion of these has been episodic and cliché-ridden. Although this subject is of supreme importance to any consideration of men and technology, very little evidence is collected to guide our thinking, very little thinking is done on the subject, and what thinking is done is largely ignored. The three most important basic positions which have been delineated in the last 190 years are the following:

First there is Adam Smith, who for all practical purposes initiates the discussion. He says that in the organization of work the development was toward ever finer division of labor with a correlated specialization of tasks.[2] For him, not only was this "the development," but also, with proper organization of the economy and the society, it was, on the whole, a very desirable one. By dividing the labor and specializing, the wealth of the society could be maximized, i.e., the quantity of goods which could be produced would far surpass the accomplishment of any previous age and more precisely, of any age with a craft basis of production.

A key assumption is that the skill demanded of most workers in this process would be reduced to the absolute minimum. This is using "skill" in the sense of a knowledge and ability which depends on extended training and practice. In place of this skill the new worker has task-facility; he can perform a simple task with great dexterity, a dexterity which results from on-the-job repetition of simple operations rather than extended training.[3] Smith recognized a serious problem arising in this connection. The price of high production was task-specialized men. In essence, the perfection of the economic system would result in warped men living among plenty. To counter this warping, Smith counseled education.[4] With education to upwarp, to round out the knowledge and abilities of men, a society, which up to that time had appeared as fantastic or utopian, could now be achieved. On the whole, there was little need for formal vocational-technical education; what training was necessary would be learned on the job.

A second view, actually a variant on Smith's, was that of Karl Marx. In most respects he is in agreement with Smith, but, crucially, his point was that capitalist society cannot educate. It can only warp men and in the process destroy itself. In the subsequent society, things would be so organized as to allow an interchange of jobs.[5] With men continuously working at different jobs this would both assure the productivity and avoid the dysfunction of task-oriented ignorance. Once again, Marx devotes little explicit attention to formal vocational-technical training. In part, he must have viewed it as unnecessary, since most tasks were so simple; if there were community supported vocational schools, he would, no doubt, have considered it a public subsidy to the capitalists.

A third view, the one most frequently considered in contemporary intellectual circles, we will, for short, refer to as the Neo-Smithian view. In this view it is again assumed that we have division of labor and specialization, but a key difference here is the assumption of "rising skill levels."[6] The general

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corollary assumption is that incomes are raised as a result and larger quantities of goods become available to the average employee. This argument is equivocal since, if we reject the Malthusian assumption, incomes would rise whether or not skill levels rose. This point applies especially to those whose skills are in short supply—*their* incomes will rise relative to the average and their share of the total goods will increase.

The argument is equivocal in another more important way. Without explicit consideration of Smith's point about warping, there is a general assumption to the contrary usually involved. How this broadening occurs is not made clear. The best line of argument is that the occupational commitment is drastically reduced—the work week is shorter—and thus there is more free time, more leisure to allow making up for the limitations of occupational life. Whether people will "make up for" their losses is an open question. Poorly planned or decaying cities which force extended commutation time may remove the leisure which has been "gained."[7] The work week claims are grossly exaggerated; the average work week in the United States has shown no important changes in twenty years; in fact, what little change has taken place is in the direction of a longer work week rather than a shorter one.[8] Much leisure activity involves paying attention to overt or covert advertising which, if taken seriously, will lead to increased work to pay for the goods advertised.

To the extent that skill levels in fact are being raised, the character of warping is changed. Rather than being warped through continuous repetitions of simple tasks, those affected will have experienced one or both of the following: a shift in their general primary and secondary education such that school training develops their practical job skills (denying them the broadening aim of general education), or they will have to undertake special schooling in order to acquire those skills. This might be undertaken as a youth, for some years prior to assuming a job, or may be done concurrently with the job, either during time off from work, in the evenings, or as in the case of teachers, during their summers.

The possible "necessity" involved in job training is irrelevant and should not be allowed to obscure the fact of "warping." Engineers are necessary for an industrial system; it is necessary that they undertake four or five years of formal training as a minimum and that they continue study throughout the course of their lifetimes. But it is also true that time spent in this job training and on the job is time which is not available for that broader, self-developmental education. As a general principle we can and should strive to reduce or limit such "necessary training" as much as possible. By way of illustration, a persistent difficulty in many occupations may be noted, one which we may label pseudo-professionalization. By this is meant the proliferation of entrance requirements above and beyond a level needed for adequate performance of the work. This is perhaps most noticeable in the field of education where we have many make-work courses, the aim of which, in all probability, is to guarantee an artificial job monopoly which in turn aids the achievement of both prestige and income. These spurious necessitarian claims may even be destructive of the aim of the profession by discouraging entry of the best talent and encouraging the dull but persistent plodders.

This is one further and extremely important range of implications following from the "rising skill levels" assumption of the Neo-Smithian viewpoint. The basic image is one of a system having very tight interlock between jobs. The rules covering the jobs characteristically involve close "coordination and control" of activities. Given the need for training, the quantity of job mobility or interchange will be markedly restricted. Mobility depends in the first analysis on acquisition of the necessary training; it cannot be a function of mere likes or dislikes. Although the specific job is not thereby determined (that is, whether one works in Firm P or Firm Q) and interchangeability is formally free in our society, in actual fact there exist a number of procedures and "necessities" which work in the opposite direction. The impact of seniority, pension, and retirement systems as well as stock options all work to limit interchange within a job class. These devices, in addition to being a "favor" to the employee, are also justified as means for creating the loyalty, continuity, stability, knowledge of company procedure, the morale which are "necessary" for a successfully functioning organization. There is a role for social mobility in this Neo-Smithian world but, as indicated, it depends on getting the necessary vocational-technical education. The place of the gifted amateur, the entrepreneurs of the days of yore, disappears.

One forthright presentation of this case appears in an introductory sociology text. The authors put it as follows:

> The functional system is capable of becoming a vast and intricate mechanism of delicately articulated relationships in which each function is contingent on every other function. While such a development is a movement toward efficiency, in the sense of creating a larger volume of product or service per unit of human energy expended, it confronts the population as a whole and individuals in particular with a new and serious rise. That is the risk of *dislocation of relationships*. . . . The more complex in the functional system, the greater is that risk factor.
>
> To guard against disruptions and the threat of chaos, a *co-ordinating function* is necessary . . . superimposed upon families, businesses, and other organizations is a political authority equipped with police power which may be employed directly or indirectly through various political agencies. The point to be stressed is that *centralization of control is a necessary accompaniment of interdependence.*[9]

In another connection the authors add:

> The complex urban functional system, while creating diversity, also requires and produces a considerable amount of standardization. This is most obvious in terms of standardization production and consumption patterns that go with a high degree of specialization. Whole systems of habits, expectations, and attitudes clustered about consumption and production patterns thus also tend to become standardized. The urban man is consequently at home in many different communities. Various trade organizations, labor unions, and educational organizations further facilitate the standardization of behavior.[10]

Given the focus on the complex technical interdepedence in the economy an obvious question occurs, namely as to the role of participation or democratic control over this mechanism. On this subject the authors are somewhat equivocal. They say:

> In a democratic urban society ultimate control of the massive powers of government is in the hands of the voting public—at least theoretically. Changes in legal norms and the way in which norms are enforced are presumably decided by the electoral process.[11]

The apparent point of the qualifications "at least theoretically" and "presumably" is that we are dealing with a myth and in point of fact the requirements of the mechanism are going to be controlling. It is in this connection that the authors discuss organization which "facilitate the standardization of behavior."

The basic outlines of the Neo-Smithian image of society then is one of tight interlock of the units, little room from change or movement, and where, to obtain the benefits of the mechanism, it is necessary to have a high degree of policing so as to maintain the very delicate and apparently unstable "order." For the individuals involved, this view means that they give up personal freedom in exchange for a huge quantity of consumer goods. For vocational-technical education there is also a clear lesson: training must involve the development of specialized knowledge *and* sublimation of any disruptive interests or sentiments which might enhance the "risk of dislocation."

The view is not quite so attractive when the implications are spelled out in this way. On the whole, we might say that this view amounts to one of a "genial police state" although to be sure, the police are only an afterthought, an ultimate reserve necessity and not the key to the system. The key to the system lies in the sedulously trained high valuation placed on goods and the planned diversion of interest, particularly away from the values of spontaniety or autonomy.

Markedly different implications follow were we to reject the initial controlling assumptions. Despite the necessitarian claims associated with this view, there is good reason for considering some alternative possibilities.

Let us proceed first with the assumption of rising skill. The alternatives, put simply, are either lowered skill demands or "shifting" demands such that no clear net tendency is evident. Let us consider the possibility that skill requirements are, on the whole, being reduced.

Most claims in support of the rising skill levels assumption, by way of offering evidence, point to the rising education levels in the country as a whole, indeed in all industrializing countries, and to the transformations in the labor force, specifically to the reduction in the "unskilled' ranks and the increase in "professionals" and "clericals." Without further qualification, such evidence does not amount to a precise proof in support of the claim. Educational levels can show enormous increases at the same time as skill requirements are falling; that is to say, there is no necessary connection between the two. It can be, as in the United States, that relative to the sheer technical requirements we have an overeducated population. This presents one of the peculiar personnel problems which we face—finding sufficient numbers of suitably dull people to fit into the many dull jobs. In fact, the overly high educational levels go directly against one of the system's presumed major needs, achieving an adequate level of sublimation. Many job applicants, rather than stressing their high education achievements, do just the opposite—in order to get a job they dissimulate in the other direction, stressing that they have not been "overtrained." This is the familiar problem of the college educated in the ranks of the clerks, typists, and office machine operators. A similar situation has arisen in West Germany where parents in manual labor insist that their children learn a manual skill—even though the supply of skilled workers far exceeds the demand. The result is that many workers who consider themselves "skilled" are actually engaged in semiskilled work. In other words, going by the education index would mislead the analyst as to the actual state of occupational affairs.[12]

Much the same kind of point can be made about the transformations of the labor force. Does a shift from a factory machine to an office machine represent an upgrading of skill standards? In giving *a priori* answers to this question, we should be careful to "de-mystify" the IBM machines and make no gratuitous assumptions about the skill needs involved. The most frequent demand, incidentally, in the current state of data processing is for key punch operators.

Fortunately we do not have to settle for *a priori* solutions to the question. James R. Bright, a leading researcher in this area, has raised the question, "Does Automation Raise Skill Requirements?" Says he, It seems immediately obvious and apparently logical that automatic machinery does result in higher work-force skills, but is this really correct? I hold that it is not—and that, despite a number of exceptions here and there, the opposite is a truer picture of reality."[13]

To spell out his point in more detail, he reports, ". . . there was more evidence that automation had *reduced* the skill requirements of the operating work force, and occasionally of the entire factory force including the maintenance organization. . . ." Management, he reports, recognized their error. Many had originally assigned high rates on the basis of a gratuitous misjudgment (upgrading) of the skill required. Much of the claim about upgrading is based on research conducted during the transition period. But, Bright reports, after certain levels of mechanization were achieved there was a reduced need for skill. The necessary training time was reduced; having more easily learned skills, men became more interchangeable. Reviewing the history of technology from Smith's day to the present he says that we had an increase in skill requirements up to a point (now past) after which we shifted to a technology where the machine detects flaws in the process and automatically corrects. At this point the "typical" worker's task is signal control, a task which does not require a high degree of skill. Bright also notes that, "Much of the confusion over the effect of automation on skills really stems from a definition of the problem, particularly the failure to distinguish between the operator's job and the jobs of repairmen, quality control specialists, and others in the indirect labor force." Automation cuts directly into these latter skill areas. Automatic control and correction make them unnecessary.

It is impossible to do justice to all the details of Bright's case in this short summary. On the whole, while we may consider his evidence as a rather convincing first-face case for the claim, it is probably best from the viewpoint of strategy to leave the question open. This goes back to the initial points of this paper on the kinds of information we lack—on the kind and quantity of jobs in the future and on the skill requirements for those jobs. A strategy which, with no further ado, declared for the rising skill level claim would involve vocational-technical education in commitments which might very well be inappropriate for our problems. Once committed, it is difficult to "uncommit."

There is one important implication contained in Bright's analysis which deserves further consideration. If skill levels are going down, then job interchange is a possibility—that is, for most people. They can shift from job to job with reasonable ease and thus contribute both to their own personal development (by getting a larger view of the productive process, by not being specialized, by avoiding a job-specific warp) and possibly also higher productivity. By seeing a wider range of the process they will understand more and conceivably be able to suggest improvements which are not visible to the distant technical expert. Moreover, some recent studies of work motivation have shown that all-too-fine division of labor makes the work uninteresting, contributes to apathy, withdrawal of work motivation, and ultimately to higher absenteeism and turnover. By consciously sponsoring job interchange these difficulties may be partially overcome and savings will arise in the personnel department. (This, in turn, reduces the need for still another kind of specialized labor.) For those engaged in "interchangeable labor" there is little or no need for any special vocational-technical education, most of their knowledge will be learned on the job. As far as their education is concerned, it can be almost exclusively general. There is no need for technical education to "cut into" their time available for broad-gaged learning. Interchangeability also means that, regardless of the resolution of the "close interlock" question, individuals can transfer with relative ease out of an onerous position into one which is more attractive. That is, they are freed from one of the range of restraints posed by an inflexible system.

A second major problem inherent in the Neo-Smithian position stems from the "close interlock" assumption. Here again it is fruitful to open up some questions by denying the necessitarian assumption. Is it necessary that such close interconnection exist? Is that the only option which does not sacrifice the value of maximized production? To put the question a different way, is dislocation a risk? Is it a dangerous venture, one with all kinds of *negative* consequences awaiting us should we dare to tamper? Or is it, perhaps, an opportunity with both anticipated and unanticipated advantages possible?

Curiously enough, although the theory holds our choice to be one of high productivity plus control as opposed to one of primitive low productivity plus "freedom" (that is, play in the system, ability to make changes with no great, dangerous losses should the changes be mistaken), much recent anthropological evidence indicates the primitive condition to be one demanding tight controls. Given the virtual total use of resources and their poverty, they pay with lives for errors in judgment. By comparison, the complex systems can undertake and abandon massive programs with no serious deterioration in living standards.[14]

Ordinarily, when one denies the need for coordination we have conjured up immediately the image of an auto plant (the epitome of coordinated production) with its many conveyor lines carrying parts to the main assembly line. We are asked to view the spectacle of red, yellow, and green fenders being put on a black car, this being followed by beige interiors and blue doors. Or perhaps, because the workers get tired at this point and want relief from the insistence of the line, they just take off, so that twenty multi-colored products lack any fenders.

Rather than taking the obviously absurd case, let us look at the realistic experience. In an account of British experience with food supplies in wartime, the economist Mancur Olson has come up with some extremely important findings. In World War I we had an instance of a planned disruption of the close interlock in the British economy. The German Cabinet and general staff decided that the most vulnerable link in the entire British economic effort was in its food supply. Assuming total commitment of resources and virtually no interchangeability (what, after all, could be substituted for food?) they agreed to the plan for unrestricted submarine warfare. As they had it calculated, losses of 600,000 tons of shipping monthly would put England out of the war by the first of August, 1917. Their "quota" was more than filled, British shipping losses going well over that figure. The result however was markedly different; not only did Britain remain in the war, the population as a whole ate better than ever before.[15]

The "trick" involved was relatively simple. A high degree of specialization not only uses resources, it also quite paradoxically saves them, although not, of course, the same resources. The fact that the nations divided the labor, all countries doing what they could do best and trading their surplus meant that England had much agricultural land lying fallow. Without realizing it when the Corn Law was abolished they had created an agricultural reserve. When the international division of labor broke down they were able to take advantage of these unused reserves. Germany, on the other hand, with much larger farm areas and a larger farm population, was in grave difficulty because its farm lands were heavily committed and overused. As a result, by 1917, the German diet suffered while, as noted, the British diet improved. Although about five percent of the skilled farm labor had been removed for direct military services, the use of another reserve, aged and retired men plus previously nonemployed women, when applied to these reserve lands was able to increase food production by fifty percent. Another part of the "trick" involved a coordination and shift of imports so that the ships that did make it through the U-boat blockade were loaded with needed food products and tractors. Still a third part of the "trick" involved the use of rationing, which meant more equitable distribution of a slightly smaller total food supply. It was this redistribution which improved the nutrition of the entire population. A key factor in the ability to "work this solution" was having a civil service capable of understanding and executing this change quickly.[16]

This solution, miraculous as it was in the face of the circumstances, viewed from another perspective must be described as "only adequate." The British government did not respond to the problem until 1917 although the need for consideration and planning of some such response was clearly visible long before 1914. If they had begun their program as early as 1914 they could have worked out an even more adequate solution, one which would have solved the immediate (1917) food problem, which would have laid up surpluses to carry over into the immediate postwar era, and one which would not have meant the sacrifice of industrial production and trade, which in turn built up debts that were to plague the nation for more than a decade.

The lessons are relatively simple; a complex economy is much more flexible than the Neo-Smithian theory would lead us to believe. It is so because there are "hidden resources" available that we do not ordinarily recognize as such. The ability to extemporize alternative solutions depends on having both able administrators and skilled laborers who are not ineluctably warped into a single specialization. One other lesson is that some of the solutions which come to light as a result of forced shifts may be more adequate than our originals; that is, rather than viewing changes or interruptions (disequilibrium) as risks, it is reasonable to view them as opportunities.

Our solutions, in general, have been "emergent" ones in the sense that they grew out of or were stimulated by the institutional solutions which preceded them. This is opposed to the "theoretical" solutions—those provoked by thought, quite independent of previous experience.[17] The range of theoretical solutions is likely to be much larger than the range of emergent ones, and by sheer chance alone the possiblity of a better solution is likely to lie with theoretical effort. The implication for vocational-technical training is that we should want to train in such a way as to cultivate "openness" of mind and relatively quick shifts in the application of skill. This need not mean a transfer of lawyers into medicine. More realistically, however, it would mean that engineers should be trained with a view toward possible shifts from one kind of production to another, with a view toward simplifying and generalizing both knowledge and procedures so as to facilitate skill interchange.[18]

The remarks thus far are intended as an introduction, as a consideration of the context in which vocational-technical education will take place.[19] Where many discussions talk in terms of "necessity"—that is, that such and such will be the context, one purpose of this discussion is to note the options which are open to us. Since some of the options are already fairly well treated elsewhere, what follows will consider the "'needs" which are entailed should we choose to operate on the following assumptions:

1. One of generally declining skill levels
2. A system aiming at loose integration and high flexibility in achieving solutions
3. A system aiming at interchangeability, particularly among those whose jobs have low skill requirements

The first is an empirical question which, hopefully, will be answered in the near future. The second and third points are desiderata, aims which will make a modern economy consonant with a democratic policy and broad personal development.

The Units Under Consideration

a. Governments: National, state, local, special purpose (general schools) and foreign. For the most part we will be concerned with the role of the national government.

b. The Schools: Obviously a key unit is going to be the schools themselves, the polytechnical institutes. These will consist of teachers and administrative staff.

c. The Working Professionals: The graduates of the polytechnical schools who for the most part will be employed in industry.

d. Firms (public and private): The employers of the vocational-technical specialists.

e. The General Public: The consumers of products. They are also the producers of products and usually serve under the indirect guidance of polytechnical specialists.

f. A Professional Organization: An organization of polytechnical teachers and graduates whose concern is with problems affecting the standards and performance connected with their work.

The Tasks

1. National Research: A prime need, given our earlier discussion of data gaps, is for research on the character of the labor force, the shape of skill requirements, and adequate projection of future needs. Such work is probably best undertaken by the Department of Labor with the aid and advice of the Commerce Department. These researches will provide the guidelines for the performance of vocational-technical schools.

2. Goal Setting: The schools must set goals for their achievement. It is preferable that this be undertaken collectively so that there is an adequate division of academic labor, limited overlap in offerings, and no needless competition for scarce academic personnel and physical resources. Basically this will take the form of "training X persons in X_1 specialization, Y persons in Y_1, and so on . . . within time span Z." The X's and Y's would be derived from the assessments of labor force needs as indicated by the Federal government's research and projections. The school goals also include a fairly detailed specification of the content of these specializations, looking especially to ways for generalizing knowledge and maximizing interchange and flexibility.

Since we are aiming at and assuming ease of job interchange, it is necessary to "overprepare," that is, to train more people for a specialization than are necessary in the light of our projection. Many persons, after all, having tried a job will quit and go into another. This overpreparation, incidentally, merely continues current practice; many professions, the most striking of which are teaching and nursing, train large numbers who never practice.

The term "specialization" rather than job is used. If we wish to encourage interchange it makes little sense to train for jobs, even though our basic planning device involves estimates of job trends. Ideally we should aim toward developing specializations which can fit as large a range of jobs as possible. A person with a specialization as "electrician" should, for example, be able to take a job in radio or television repair, household appliance repair, wiring homes or offices, or wiring of automated control systems. At first it may be necessary to stress job training (since we are working out of past experience), but more and more we should attempt to develop and train for such broad specializations.

Goal setting should be explicit and continuous. Rather than depending on no-plan or on sweeping generality, there is a need both for "measurable guidelines" and for periodic readjustment. Year-by-year budgetary-type plans are likely to be inadequate. So as to be able to bring the necessary resources to bear, four, five, or six-year planning units would be most appropriate. The specification of aims and time span for their achievement makes drift extremely difficult (if not impossible) and forces periodic rethinking of one's directions.

3. Evaluation of the Achievement: There should be a research organization which has the task of evaluating the accomplishment; that is, to assess the quantitative and qualitative dimensions of the success or failure. Did the schools educate the number desired? Did they achieve the quality of education desired? Was the accomplishment achieved in the best possible way?

There is a recurrent problem to be avoided here, one we may refer to as the prosecutor-jury problem; this is essentially one of conflicting interests. In this case we have school administrations charged with the accomplishment of an educational aim and we need to have another agency for evaluating this accomplishment. It is important that the evaluating agency be separate and autonomous. Possibly this agency, essentially a research office, could be established by the Professional Association, but even here it should have a considerable grant of autonomy. Its task is the undertaking and presentation of objective research studies. These studies would then be of aid in the next setting of goals, allowing improvement and correction in the light of the last period's experience.

4. Administrative Evaluation: In addition to researching the character of the actual achievement (number and quality of skills created), there is a need for close study of the organization itself. Many people have read and joked about Parkinson's law, but, like the weather, few do anything about it. The basic point here is that we can very easily have a growth of dysfunctional administrative organization. Agencies which have grown (which have "accreted"), which may once have had a function, do not as easily "ungrow." They do not wither away. This is the problem of people acquiring a psychic investment in a job regardless of its objective place in a complex system, an investment which makes it difficult to eliminate the job. This reduces organizational flexibility, diverts resources, and ultimately may alter the goals of the organization (e.g., to job protection). This too, then, should be one of the tasks of the research arm: to make recommendations for administration "building" and administration reduction. Here too, there should be regular periodic reevaluation.

Both of the above types of evaluation will create some internal strains. Such strains are most likely to be found in those units where the "bureaucratic personality" (characterized by a narrow task orientation at the expense of the larger goals) has come to dominate; that is, where there is insufficient visibility of and commitment to the professional goals. By making the goals explicit and periodically revising and rediscussing them, this should make the professional aims more continuously salient.

5. The School Organization: There are a number of persistent problems deserving attention here. The first, which is related to the above concerns, is the problem of administrative isolation. This refers to the tendency for administration to become distant from their faculties and from their former students now in practice. This is "forced" in many cases, at least, so it is claimed, as a pure organizational necessity. With the growth in size of an institution a larger administration is needed, the administrator-teacher roles are abandoned and both types of work specialized. The building of an "administration wing" means that now even the architecture contributes to the separation of the two groups. The absence of day-to-day contact gives rise to a growing separateness of interests, the possibility of misunderstanding, and loss of the other's perspective. This means in turn that organizational energies will frequently be spent in correcting misunderstandings or, in the extreme case, in fighting one another. It is therefore advantageous to break down such isolation where it exists and prevent its appearance where it does not exist. Mixing offices is one possibility, building propinquinty rather than separation into the architecture. Another possibility, and one which should be aimed for, is to try to maximize collegial decision making. Rather than getting administrative specialists, the administrative task should be divided among the teachers as much as possible. Clerical aid should be assigned to them for the more routine tasks. Decision-making should lie with the teacher-practitioners to the greatest possible degree. This should not be too difficult given the high quality of personnel likely to be involved. This too might be a task for the research arm: to discover ways of improving the collegial decision-making and further extending it.

6. Role of the Teacher: A school for the training of teacher in vocational-technical education must face the familiar problem of the teaching-research dilemma. Formally the problem is quite simple. On the one hand we could follow through a basic Smithian assumption, that specialization is desirable, and make two separate roles, teachers and researchers. If we did this both would be rewarded according to their respective performances. On the other hand, following out above criticism of specialization, they may well have some major disadvantages. The best teachers may be those with research experience, those best able to teach the latest information being those with recent research experience in that field. Those with no research experience may be the least qualified teachers, having gained all their knowledge "from the books," and being unable to evaluate properly the relative importance of the material, unable to appreciate the reliability of various findings, and being unable to appreciate the difficulties in even obtaining the findings. In most cases, some mixture of experience would appear to be eminently desirable. To be sure, there are some cases, such as that of the talented researcher who is tongue-tied, where it makes sense to provide a place for his specialized ability.

The next question is about the rewards. Again, formally the problem is simple. If the rewards are given for research, teaching will be neglected. If we value the teaching, it too has to be rewarded. In part the problem is solved by having a separate research arm. People, in their everyday activity, will be doing one or the other. Some planned interchange of activity should be arranged so as to develop wider skills on the part of both researchers and teachers and to counter any possible wide divergence of interests. For the most part, it should be made clear what the member's taks is and the rewards should be aligned accordingly. There should be no fakery involved in this. Rather than overlapping the tasks, having them done simultaneously, perhaps formal provision could be made for the granting of a research year for every X years of teaching. This will allow the man to do both tasks without giving encouragement to research by the "light of the moon" or to cutting corners in his teaching.

7. The Teacher-Practitioner Strain. Another problem of some note, especially in professions, is the disparity in outlook between personnel in the training institutes and the practitioners "out" serving clients. The teachers are the "guardians" of knowledge, the specialists in the arcana, the maintainers of the standards. The practitioners must face the practical problems and become adept at this level. They also, necessarily, forget much of the formal knowledge learned in the institution and also, because of their position, develop divergent orientations toward the profession. The strain has long been noted in the theological professions where the teacher-scholar and the clergyman-practitioner are frequently at odds, the for-

mer despising the latter for his ignorance of "theory," the latter perhaps with some guilt, annoyed with the former for not knowing and preparing the students to face the practical problems of the faith.[21] The same strains are present between law school faculties and legal practitioners. Something of the same also appears in numerous other contexts. This is not a case of one side being right, the other wrong. The theological seminaries, to be sure, were not training the clergy for the problems they had to face. One response has been to shift the curriculum accordingly. At the same time, the practitioner can become involved in the ultimate practical details to such an extent that he loses sight of the professional aims and standards. He assimilates to the standards and values of the clients, eventually becoming once again a nonprofessional.

To counter this it is worthwhile planning a systematic interchanging of activities; this refers to a kind of internship for the teachers. Unlike the medical internships, this is best done throughout the professional life of the teacher. These could, perhaps, be undertaken during the "research years" (or maybe more frequently for shorter periods). It is probably best that the teacher "go to" the practice rather than the practitioners becoming teachers. An internship, to be sure, is not entirely satisfactory since the experience is going to be particular and therefore limited. It might be another task for the research arm, to collect and assess the experience of the many practitioners in the field—what they think to be the strong points in their education needing further emphasis; what they think are the weak points needing further coverage; where the training is dated; and so forth.

8. Clarification and Justification of Procedure: A problem which recurs even when the best of will is involved is a failure of understanding between interacting groups. If this persists there develops a suspicion of each other's motives. A profession promulgates rules which it knows to be consonant with the best interests of its trade. But this is done by a separate and more or less autonomous corporate body and, in effect, is imposed on the public and on various clients. Rather than declaring that "this is the way we do things," proper professionalism should strive to first rationalize and simplify procedures as much as possible and then, where a need exists, justify this procedure before members, clients, students, and the society at large. In other words, an effort should be made to demystify the professional procedures for the general public. A persistent effort in this direction should prevent a profession from becoming isolated from the larger public and from acquiring a reputation for protecting its special corporate interests which are seen as opposed to those of the public at large. To the extent that procedure is rationally justified rather than dogmatically affirmed, the way is left open for a relatively free and flexible adjustment or transformation of procedure as new conditions either demand or make it desirable.

9. The Political Task: The process of educating does not take place in a vacuum. Most education is dependent on either a state, community, or school administration and also on the consent or good will of the general public. Educators may work out this relationship in ways differing from complete dependence on the one extreme (the outlook being one of acquiescence, taking orders, adhering to rules—the dominant note being passivity, the worst form of bureaucratic personality), to aggressive independence on the other. Educators are, in a sense, the only ones knowing the "needs" of their institutions and if they do not, or cannot, make themselves heard by government and public then the enterprise will suffer. For this reason, in the training of educators, it is important to include a course in the curriculum on practical politics—on how to lobby, how to undertake publicity campaigns, how to build supporting coalitions, etc. In this connection, the course should teach a need for inventiveness, innovation, and personal autonomy—just the opposite of the fawning subservience which so frequently and so sadly affects the fortunes of educational endeavors.

One final consideration of a more general character is in order. Research, particularly organizational research, tends to become focused on actions or occasions which can well be put under the heading of "organizational pathology." It is worth going out of our way to counter this characteristic research bias in order to collect *good* experience, to collect information about the successes. We have, for example, numerous studies of inefficient organizations or of undemocratic societies but few of efficient or democratic ones. We have studies galore of crime and delinquency plus hundreds on assorted varieties of deviant behavior. The average sociologist would be hard put to cite one on "The Social Sources of Saintliness." And yet, it is this experience which is going to ultimately allow improvement of the human situation rather than a mere "patch up" of the more glaring problems.

NOTES

1. There is much first rate work on labor force trends. I have in mind among others the works of Bancroft, Ginzberg, Haber, Jaffe, and Woytinsky. There is, however, an absence of specific estimates and discussion of the detailed skill needs within occupations such as are needed in planning vocational-technical education programs.
2. Adam Smith, **An Inquiry Into the Nature and Causes of the Wealth of Nations,** (New York: Modern Library, 1937). Book I, Ch. 1, Other important discussions of the skill question appear in the works of Malthus, Saint-Simon, Senior, J. S. Mill, and Ricardo. Lesser known discussions appear in the works of Andrew Ure, particularly in his **Philosophy of Manufactures** and in Proudhon's **Philosophie de la Misere,** ("The grown worker becomes once again an apprentice, a child"). More contemporary discussions appear in the works of Max Weber, Carr-Sanders, Ferdynand Zweig, Theodor Geiger, and Peter Drucker.
3. Excellent discussions of the meaning of skill and of recent transformations in the character of industrial skills may be found in Michel Collinet's **L'Ouvrier français; Essai sur la condition ouvrière, 1900-1950,** (Paris: Les Editions Ouvrières, 1951). A brief English summary appears as "The Structure of the Employee Classes in France during the Last Fifty Years," **International Labour Review,** LXVII No. 3 (March, 1953) 211-235. Also doing much the same is Ralf Dahrendorf's essay, "Industrielle Fertigkeiten und Somiale Schichtung," **Kölner Zeitschrift für Soziologie und Sozialpsychologie,** VIII, No. 4 (1956) 540-568. See also his "La situation de la classe ouvriere en Angleterre," **La revue socialiste,** Nos. 88 and 89, June and July 1955.
4. Smith, **op. cit.** Book V, Ch. I, Article 2. Especially pp. 734-35.
5. Karl Marx and Friedrich Engels, **The German Ideology,** (New York: International Publishers, 1947), pp. 3-43. See especially p. 22, "For as soon as labour is distributed, each man has a particular exclusive sphere of activity, which is forced upon him and from which he cannot escape. He is a hunter, a fisherman, a shepherd, or a critical critic, and must remain so if he does not want to lose his means of livelihood; while in communist society, where nobdy has one exclusive sphere of activity but each can become accomplished in any branch he wishes, society regulates the general production and thus makes it possible for me to do one thing today and another tomorrow, to hunt in the morning, fish in the afternoon, rear cattle in the evening, criticize after dinner, just as I have a mind, without ever becoming hunter, fisherman, shepherd or critic."
6. For a presentation of this view see Clark Kerr, John T. Dunlop, Frederick Harbison and Charles A. Myers, **Industrialism and Industrial Man,** (New York: Oxford University Press, Galaxy Book, 1964). See also Frederick Harbison and Charles A. Myers, **Management in the Industrial World,** (New York: McGraw-Hill, 1959).
7. The challenge to the "increasing leisure" assumption appears in a more or less systematic way as far back as thirty years ago. See F. R. Leavis and Denys Thompson, **Culture and Environment,** (London: Chatto & Windus, 1933) and Stuart Chase, **Men and Machines,** (New York: Macmillan, 1933). A recent summary critique is that of Sebastian de Grazia, **Of Time, Work and Leisure,** (New York: Twentieth Century Fund, 1962). Of some interest in this connection is the work of the Goodmans, see, by Paul and Percival, **Communitas; Means of Livelihood and Ways of Life,** (New York: Random House, Vintage Book, 1960) and Paul Goodman, **People or Personnel: Decentralizing and the Mixed System,** (New York: Random House, 1965).

8. **New York Times,** 18 February 1965, p. 1. "The factory workweek . . . rose last month to the highest level since just after World War II. At 41.4 hours, the work week equaled the level of October, 1945." Adding on the increases in commutation time since 1945, the impact of those twenty years on leisure time is likely to have been nil.

9. Ronald Freedman, Amos H. Hawley, Werber S. Landecker, Gerhard E. Lenski and Horace M. Miner, **Principles of Sociology,** (New York: Henry Holt and Company, 1956 revised edition). p. 212.

10. **Ibid.,** p. 461.

11. **Ibid.,** p. 460.

12. One other point. In the United States there is evidence indicating that a large portion of the "rise in educational levels" is the result of lowering educational standards. It is, in other words, merely a relabeling of the accomplishment. What used to be called ninth grade accomplishment is now called twelfth grade. Since it takes twelve years to achieve what was once done in nine means that considerable losses in the use of human resources have been incurred.

13. James R. Bright, "Does Automation Raise Skill Requirements" **Harvard Business Review,** 36 (July-August 1958) 85-98. See also, for a more extended treatment, his **Automation and Management,** (Boston: Harvard Business School, 1958).

14. For a study of change in the small community with an overcommitment of resources, see McKim Marriott, "Technological Change in Overdeveloped Rural Areas," in **Economic Development and Cultural Change,** Vol. I, No. 4 (December, 1952) 261-72. For a much more optimistic picture, although one of a community with many unused resources, see Allen R. Holmberg, **Changing Community Attitudes and Values in Peru: A Case Study in Change,** (New York: Random House: Vintage Book, 1960).

    There is a general assumption made about social change in American discussions that no matter what, the net balance resulting will be negative, that is that things will be worse than before. Usually this is assumed to stem from a range of unplanned, unexpected consequences. The "metaphysical pessimism" is usually based on the "close linkage" assumption. The case reported by Holmberg indicates, considering the side effects, a net positive balance. Increasing real incomes, for example, reduced the need for stealing, reduced stealing in turn reduced interfamily conflict and allowed greater cooperation.

15. Mancur Olson, Jr., **The Economics of the Wartime Shortage,** (Durham, N. C., Duke University Press, 1963), Ch. 4.

16. Another key instance showing the relative of ease of substitution even where, presumably, we are dealing with an "unsubstitutable" entity is considered in Olson's "The Economics of Target Selection," **Royal United Service Institution Journal,** XVII (November, 1962) 308-14. This deals with the bombing of the Schweinfurt ball bearing works during World War II.

    Olson here distinguishes between tactical and strategic experience. The former is illustrated by the case of a battle (as for example, where for want of the nail the shoe was lost). Given the exigencies of that situation, no substitution is possible. Given a longer time span and the framework of the entire economy, considerably greater chances for substitution are possible. Our earlier case of the malfunctioning auto factory would be, in these terms, a tactical case.

17. Even our wartime solutions tend to be emergent. A unit is destroyed or a resource is in short supply. Given the stimulus we work out a response. In some sense, the works of John Dewey might well be described as a codification of emergent procedure—thought being stimulated by "problems" which, in turn, arose out of "experience."

18. Seymour Melman shows how the United States' machine tool industry does not achieve economies of scale because of a widely diversified range of marginally differentiated products. A consequence of this is that greater skill is demanded in both setting and servicing this relatively large range of machines than would be the case with a "basic model." If machine tools were standardized and the aim were a flexible, all- or multi-purpose product, either the time required to train a skilled worker would be shortened, or in the same time, a wider range of skills could be taught. See Melman's **Our Depleted Society,** (New York: Holt, Rinehart and Winston, 1965) 51 ff.

19. I have omitted from this paper consideration of a number of important subjects which must be faced in setting up programs in vocational-technical education. Among the unraised questions are the following: Who shall be educated? Who shall educate? Who shall administer? (In other words, what kinds of people, or, people with what kinds of talents, are to be recruited or otherwise selected as students, teachers, and administrators?) And what curriculum shall be offered? Such considerations would take us too far afield. Moreover, there is already present in the literature an extended discussion of all these questions.

20. There is much to be said for this solution. The professional association would have a broad base, one broader than the schools, the firms, or the practitioners themselves and yet it would include the most directly concerned parties. Such a solution would help to maintain standards in individual schools by serving to check the drift in wayside or laggard institutions. It would be useful to have an agency representing the public involved, such as for example, the American Institute of Management which for years has conducted respected management audits.

21. See Liston Pope, **Millhands and Preachers,** (New Haven: Yale University Press, 1942) and Marshall Sklare, **Conservative Judaism: An American Religious Movement,** Glencoe: The Free Press, 1955). There are any number of articles on the strains in the role of the clergy which touch on similar themes.

The Advanced Degree and Vocational-Technical Education Leadership: A Sociological Perspective[1]

by

Bernard Goldstein[2]

The job assigned to Professor Hamilton in his paper, and to me in the form of this commentary, is to suggest ways in which the discipline of sociology can contribute to a solution of the problem stated by Dr. Schaefer as the need "to develop, by means of a doctoral degree program, a new breed of leadership . . . for vocational-technical education." What I propose to do is to raise some questions about the proposal and about vocational-technical education as a means of demonstrating what C. Wright Mills has called "the sociological imagination."

This program hopes to turn out not just people with doctoral degrees, but leaders. This requires that we pay some attention to the nature of leadership and the process by which leaders are produced. Leaders are people who have certain qualities that enable them to cause others to follow them. They are different from administrators in that they have the vision to see the shape of the future, and the ability to propose solutions designed to enable their institutions to adjust to or benefit from the problems they face.

If the goal is to produce leaders, then we must ask whether a doctoral level program is likely to accomplish that end. If we agree that such a program may be an effective device to that end, then we must ask what program content is most likely to guarantee such a result. If a program is settled upon, then there is the question of what kinds of recruits are most likely to benefit in the appropriate way from exposure to such a program. If there is a determination of the type of person who will benefit most from such a program, then there is the question of the conditions under which such people are likely to be available, and can be recruited into the program. This consideration then seems to lead to an examination of the educational system which precedes that of the doctoral level, and how it affects the stream of recruits.

But the desire to produce leaders is not an end in itself, it seems to me. I sense the real goal is to do something about vocational-technical education, to achieve this goal by shaping a new leadership, to shape a new leadership by altering the educational process. If we are in the business of social change, then we want to know something about previous experience in change in the field of education, the vision of the desired system of education, and the institutional network within which the future leadership will operate.

Institutions show a marked inability to change without pressure from other institutions, without the influence of "change agents" who are usually defined as "outsiders." If the field of vocational-technical education is about to make such an effort, it should allocate resources to research on the strategy of change. Part of this strategy involves the training of new leaders, and part of it involves new roles for leaders. This is an area of concern for sociology, and one in which sociological training could be helpful.

If there is to be innovation, there must be a vision of what is to be. In this context, there must be a set of specifications as to curriculum, teachers, teaching materials and methods, administrators, and so on. This set of specifications must be drawn from two sources: (1) the knowledge and knowhow within the field of education; and (2) estimates about the nature of the technological, economic, and social order 20 or 40 years hence. Here again, sociological training is relevant, as demonstrated, for example, in Professor Hamilton's discussion of the issue of skill and its place in the future society.

It seems to me that the Department of Vocational-Technical Education is concerned with three interrelated problems: (1) What should be the nature of the educational experience of noncollege-bound youth, particularly those who opt for some kind of vocational-technical education? (2) What should be the education and training of teachers of such youth? (3) What should be the education and training of the teachers of these teachers? One contribution of sociology to the education of potential leaders would be to provide them with a framework with which to view their world and their own place in it.

Within sociology, specialties or fields of interest have developed around such areas as organizations in general, and those concerned with work and education in particular, social stratification and its consequences for individual socialization, problems of social control and deviancy, and the processes of invention, innovation, and change, just as examples. In addition, a research technology is available for studying behavior whether manifested by individuals, groups, organizations, or masses.

The proposed program should have as one goal the development of individuals with competence in the social sciences, for two reasons: (1) so that your "own" people can talk across disciplinary lines and use the social sciences to the best advantage; and (2) so that you can pose and pursue questions that are of unique interest to the field itself. Exposing "insiders" to such training and contacts carried with it the danger that they will be subverted to other interests. On the other hand, keeping them isolated carries with it the danger that their skills will become obsolete. But the risk is necessary if the advantage is to be gained.

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[1] A reaction to the paper of Dr. Richard Hamilton.

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Some Considerations Regarding the Establishment of a Doctoral Program in Vocational-Technical Education

by

Andrew Hendrickson[1]

The adoption of a new doctoral program in vocational-technical education offers a unique opportunity for the university to enrich its teaching activity with creative innovations. Although the program must necessarily be built from the base of its undergraduate and Master's programs and be related to cognate areas, it can take advantage of freedom from past confining precedents and take a fresh approach fitted to present and oncoming conditions in this rapidly evolving new age in American life.

Assuming that the Master's work will have prepared the candidate fairly adequately, insofar as content and specific methods are concerned, the question arises as to what kinds of additional skills, knowledge, understanding and insight should be provided for the persons who will go on for the doctorate within this field. Presumably, these persons will be the future top level leaders in the field. They will engage in college and university teaching and/or they will fill the supervisory and administrative positions at state and national levels. In other words, they will be the trainers of teachers and they will fill posts where policy is determined statewide and nationally. What are the learning experiences and opportunities needed for growth and maturation, personally and professionally, of these candidates?

To answer this we'll need to look first at the anticipated role of the university teacher and the kind of society in which this profession is likely to operate during the next one or two decades. As any future teacher operates within the university setting he will need not only to adequately represent his field, but also to participate with the academic faculty in making broader decisions concerning the role of his university in contemporary life. His tasks and decisions will be carried out against the background of a society which is changing more rapidly and in more ways than has any society that ever existed on the face of the earth. Similarly, the future state or national administrator will need to make his decisions, and try to influence the decisions of others, in a social setting rapidly changing in its social, economic, and political forms.

The world that is evolving into the space age is scarcely predictable. Some advance thinkers have been giving us some inklings of this new world. The anthropologist, Margaret Mead, has predicted that from now on no one will grow up in the kind of world into which he is born, and he will not die in the kind of world he knew in his middle years. Others have predicted that occupational patterns will change so rapidly that most workers will need to be trained for new occupations a minimum of three times during their working careers. Believers in cybernetics suggest that in the near future only a tiny percent of our present number of workers will be needed to produce all of the goods and services we can use, and that a new order of society must evolve in which persons must be provided with an annual income on some other basis than that of holding a market-supported job.

Increased leisure, a goal long desired, now threatens to be more of a problem than the travail of labor formerly was. Examples are the thirty-hour work week of the Akron rubber workers and the eighteen-hour week of the Union Electrical Workers in New York City. Predicted also is an increased leisure period in the life span of millions who are expected to retire in their fifty's and sixty's and to live into their eighty's and beyond.

Changes come so suddenly and are so drastic that government will have an ever stronger role in both the economy and in education, intervening in both areas to prevent catastrophe as did President Kennedy in the steel industry case and as President Johnson has done with the Economic Opportunity Act.

Airplanes are now being built which will propel travellers from one continent to another at rocket speeds—and this is only the next stage in what will be continuous advancement in speed of travel and communication. Through such advances, illustrated in the use of satellites for world-wide communication, we are being forced to recognize citizens of remote and primitive cultures as our next door neighbors. Interplanetary travel may be fairly common before the century is ended.

In travel, we have moved in the last fifty years from the age of the steam engine through the age of the automobile and the airplane to the age of rocketry. In communication, we have moved from the age of the telephone and telegraph through the age of the radio and television to the age of the satellite. These are symbolic of coordinate changes in technology, highlighted now by synthetics, electronics, and computerization, that are producing revolutions in our whole mode of life many times more profound and comprehensive than anything history has known by the word "revolution" in the preceding centuries. These developments have come upon each other's heels so rapidly that we have neither fully exploited nor learned how to cope with earlier developments before the later ones are upon us. At the present tempo of change interplanetary travel and satellite communication will be upon us before we have learned fully how to cope with or fully utilize the telephone, the automobile, or television.

Addressing himself to this problem, Chancellor John D. Millet of the Ohio Board of Regents has called attention to the fact that in this century we have moved from an agricultural-mercantile economy into a highly technical and industrial economy; from an importer to an exporter of capital; from a rural to an urban society; from an isolated nation to a world power; from intellectual dependence upon Europe to intellectual leadership of the world. (*The Community School*, September, 1965; a newsletter published by the Flint, Michigan, Board of Education.)

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One could multiply these illustrations endlessly. Suffice it to say that the tempo of change is more likely to increase than to decrease.

For purposes of clarity, let us consider separately the role of the college or university teacher and the role of the administrator of government programs. First, let us consider the role of the teacher. There is a need for educational statesmanship brought about by the kinds of tasks which the modern educator must perform and the kinds of problems he meets in the different roles he plays. In an earlier period the college teacher could comfortably limit his concerns to preparing for and teaching his classes. The modern educator has a much more complex set of roles. He is variously a teacher, a voting faculty member, guiding the destiny of a complex social institution, a researcher into on-campus and off-campus problems, an administrator of newly forming projects and programs—often financed from afar—and a special consultant to business, governmental, and community agencies. In these newly forming roles the teacher puts to use not only his specialized knowledge, but also his insights and competencies as a trained intelligence and a critical thinker. His relationships with community organizations and governmental agencies may be formalized through joint appointments or short-term contracts for service, or they may be on a purely informal basis of mutual exchange of information and service.

The role of the college or university teacher in the vocational-technical area during a time of rapid change has been discussed by President Hanna of Michigan State University, who has suggested that the best course is to teach more of principles and less of techniques, since principles change slowly and techniques can be outmoded overnight (*Education Digest*, January, 1964). He cites illustrations from the engineering field where colleges have sold their steam engines for junk and closed the shops where students ran machines. The laboratories have been remade and students now study laws of thermodynamics, the structure and property of materials, and delve into the intricacies of electronics and the unmeasured potentialities of computers. He points out that with the knowledge explosion and the vast increase in students there will not be much time for how-to-do-it teaching. He concludes by suggesting that the college can help the student in two ways: (1) teaching the student the principles of his occupation, and (2) helping him develop a set of sound values. He will then be able to adjust to technological change without undue stress, and, with sound values, he will be able to face political, social, and economic change with equanimity.

As a voting faculty member the college or university professor will be frequently in a position where he will participate in making decisions which have their effect well beyond the limits of his field. He may operate on inter-departmental or all-university committees, or, in some instances, on committees affecting state or national policy. One's perusal of the literature, together with his own university experience, will furnish him with ample illustrations of these wide-ranging problems.

1. What shall be the decision-making process by which a university decides who its clientele shall be and of what its program shall consist in the light of pressure on the university generated by state and local government, by status seeking families, and by certain business and occupational groups?
2. How shall the relationship of the university to the federal government be defined in the light of the huge subsidies given by government for research, program development, construction of facilities, scholarships and other purposes? How can universities benefit from these grants and retain their identities and program autonomies?
3. As the administrative structure of universities veers more and more toward that of a corporation, what shall be the role of the faculty in determining content and quality of the educational program *vis a vis* the financial officers of the university who control the budget?
4. As an institutional policy, what shall be the proportionate emphasis given by faculty members to their varied roles? What shall be allowed for teaching, research, and community service? How can work in teaching and community service be recognized and rewarded under a policy at least as valid as that of the "publish or perish" philosophy accompanying research and writing?

While administrators of government programs will have a number of problems in common with faculty members, they will also have their distinctive problems which also call for a degree of statesmanship and ability to operate at a level well above that of office routine and administrative detail. The problems listed below could be considered examples of those likely to face government program directors in the future:

1. How shall the government administrator mediate the forces bearing on education as these derive from the national level on the one hand, and from the state and local levels on the other hand? This problem is focused in a recent suggestion coming out of the White House Conference on Education that there be sets of national examinations developed and used to measure the impact of federal support on school programs. This is understandable as derived from a national view; but seen locally, such a move denies to the home community its right to set its own criteria by which to measure educational outcomes. Hence resistance at the local level; hence the need for intelligent mediation based on something more profound than the answer to the question, "Who has the control?"
2. How shall the government administrator recognize technological and social change as it occurs and reorganize a governmental bureau or program to meet the change adequately? A persistent criticism of the vocational-technical field in the past is that its teaching of skills is usually 15 or 20 years behind the times. How can a government department gather predictive data which will recognize major social and technological changes early enough to meet them as they arrive, rather than well after the fact?
3. How shall the best in personnel and material resources be located, mobilized, and utilized?

4. How shall a program in vocational-technical education, aimed as it is at meeting needs in the economy, be so organized that it remains as freely and perpetually open to business and industry as it is to the more immediate environment in the educational setting in which it operates? The tendency is to lose contact with business and industry and to lapse back into the lap of the mothering educational complex.

One clear inference to be derived from the foregoing facts, issues, and problems is that the doctoral program should not be committed merely to the training of educators in the traditional sense, but to the preparation of educational statesmen who can deal with broad policy matters, complex and interlocked systems of events and changing orders, who are committed to the principle of lifelong learning, and who are able to find their security in a set of values with attendant modes of operation that will persist in the face of many kinds of change.

Assuming that an adequate selection process has been developed to assure a high quality of candidate and that you will not hold him to responsibility for designing the whole of the curriculum, the writer feels free to make some suggestions about the kinds of training most likely to produce the kind of educational product desired. The following are suggested as a minimal core of activities without which it would seem impossible to produce the kind of trained personnel desired:

1. A good grounding in the social sciences so that the candidate will be able to identify political, economic, and social problems which bear on education; think critically about these problems; and offer reasonable solutions.
2. Enough training in the area of school administration to furnish insight into institutional roles and relationships of and between the national government, state government, higher institutions of learning, and the intermediate and local school districts.
3. Field work and internships to provide firsthand experience, broadening understanding, and furthering of the process of professional maturity. Internships should consist of not less than six months of continuous service in a paid job, carrying a real measure of responsibility under supervisions—both of the university and the agency involved.
4. Advanced seminars where students undergo the necessity of defining problems, thinking critically, developing alternative and innovative solutions, and testing solutions in applied situations under the guidance of competent faculty members.

And now a final word from my own discipline—that of adult education. There should be no place for the doctoral candidate who is not, or does not become, committed to the ideal of lifelong learning. Our society can no longer afford the option of confining the educational development of individuals to the school and college years. New knowledge is constantly outdating present ones. The person who ceases to learn at any point in life immediately becomes outdistanced and life flows around him, leaving him stranded in its eddies and backwashes.

Adult education can contribute to graduate training in the vocational-technical field not only by furnishing a valid philosophy of continuing education, but also by calling attention to a whole array of instructional methods and techniques which are more appropriate and more effective as learning media than the traditional methods of lecture and recitation. Numerous devices for teaching now in use by professional adult educators, some original and some refinements of old methods, should be considered as part of the training of graduate students in vocational-technical education as well as in other fields. Examples are forums, panels, group discussion, role playing, buzz sessions, the interview, the tutorial, and the workshop. These are fruitful, not only as means to educate the candidate, but also as means by which his own work can be conducted when he, in turn, educates others.

The principles behind the use of these methods and media are those of involvement and participation. There should be involvement on the part of the learner in the determination of educational goals, and he should participate actively in the learning activities designed to achieve those goals. There is much research which supports the use of these principles as preferred learning procedures.

A doctoral program in the vocational-technical field could be exciting and vitalizing in its influence, not only on its own participants, but on the university community in which it is undertaken.

The Doctoral Program in Vocational-Technical Education from the Viewpoint of the Adult Educator[1]

by

Irvine L. H. Kerrison[2]

Perhaps the challenge of preparing youth and adults for what Carl Schaefer calls achieving man's total potential for good citizenship and keeping abreast with social and economic change, rather than preparing them for the "world of work," will be the more important challenge during the next decade and beyond.

There are definite signs that our society fast is reaching the point at which it can no longer cling to what Vernon L. Parrington called its deep roots in the English Puritan revolt. Before long it may be meaningless to attempt to inculate the doctrine of a sacred calling to work. It may even become meaningless to attempt to return to the older medieval concept of work for the sake of a livelihood, which the Puritan ideal of work for its own sake replaced.

Last year, Richard Bellman of Rand Corporation, without tongue in cheek, predicted that within 10 to 25 years a mere two percent of the population will be able to produce everything the Nation possibly can consume. This is what Andrew Hendrickson is talking about when he refers to the possible impact of cybernation on society.

Should that impact be as great as predicted, society may be able finally to transcend what, in the *Republic,* Plato called mere gratification of appetite and the even worthier end of distinction, and arrive at Plato's paramount end of the attainment of wisdom. Man may be able to learn to set in order his own inner life, become his own master and his own law and come to peace with himself.

But let us not get lost on "cloud nine."

Hendrickson is right when he points out that, for the immediate future, increased leisure will be more of a problem than optimum unemployment once was; that the higher educator, particularly in the vocational-technical field, will need more knowledge of principles than of techniques and a set of critically determined sound social values; and that any individual in any way connected with higher education will have to be committed to the ideal of lifelong learning.

Let me emphasize the latter point.

Not only can adult education offer instructional method and techniques specifically designed for the mature learner, not only can continuing education help keep the mature learner abreast of burgeoning new knowledge, but also, it is the only, present, obvious, intelligent alternative to work as the central purpose of life. For the immediate future it is the means by which society can most comfortably make the coming transition from the world of work to the world of "leisure." In the long run, it may well become the end of life in itself.

This is why a "new breed" of leadership today is needed in vocational-technical education. Only a broad and imaginative approach of an interdisciplinary nature will be able to fashion the elements of man, education, and work to adequately meet the requirements of a society in a state of revolutionary change.

At the core there ought to be thoroughgoing emphasis upon human relations. Contemporary management though, with growing sophistication, has learned to give the behavioral sciences more attention as it seeks explanations of the way organizations and society really work. It has turned to an interdisciplinary approach involving sociology, psychology, cultural anthropology, and other social sciences to supplement technical knowledge concerning business management. So should vocational-technical education.

As Hendrickson maintains, the doctoral candidate in that field, in addition to fundamental grounding in the social sciences which will permit him to identify, think critically about, and attempt to arrive at solutions for society's basic problems, should get training in educational administration which will provide true insight into the roles of and productive relationships among education, government, and the community, and field work which will enable him to apply theory to practice.

Hendrickson as an adult educator, however, might well have laid down more specifically what a doctoral program in the vocational-technical field ought to take from the accumulated substance of that discipline.

To be pragmatic, let us look briefly at only those findings from which such a program could benefit now. For even in the immediate future vocational-technical education will deal increasingly with the mature adult individual in more ways than one. It follows that the curriculum should take full cognizance of his special nature.

Adult education research has exploded the notion that learning capacity diminishes rapidly as one ages. Adults learn effectively at all ages, but in their own way—one significantly different from the way in which children learn.

Today over 3.5 million employees are enrolled in educational programs, a number close to the total undergraduate U. S. college and university enrollment. Management does not support so extensive a program for purely philanthrophic reasons: it demands results. The adult educator who will get results will build his program on, among others, the following guidelines:

1. Adults must want to learn or be stimulated to want to learn. They will resist learning something merely because someone says they should.
2. Adults will learn only what they feel a need to learn. They learn best when they can expect to get immediate benefits, when what they learn will be directly useful in meeting a present responsibility.

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[1] A reaction to the paper of Dr. Andrew Hendrickson.

[2] Dr. Kerrison is Professor of Management and Labor Relations, University College, Rutgers - The State University.

3. Adults learn best by doing. Only 50 percent of what adults learn passively, by reading or listening to a lecture, is retained for a year; 80 percent of such material is forgotten within two years. Immediate and repeated opportunities to utilize newly learned skills and knowledge reinforce the learning process in adults —this is why on-the-job-training is so effective.
4. Adults learn faster if they begin with specific problems, drawn perhaps from business experience, and work out practical solutions from which principles may be deduced.
5. Adults learn best if new knowledge is related to and integrated with the accumulated results of years of learning experiences. This is why adults must have freedom to interrupt, to question, and to argue. Such freedom permits the educator to spot set views and to present new ideas in such a way that experience will tend to reinforce rather than to contradict them.
6. Adults learn best in an informal atmosphere. Even freedom to smoke can be of great significance in creating an "adult" environment.
7. Adults learn best when varieties of techniques are used in teaching them. Visual aids can do much to heighten the impact of a lecture.
8. Adults want guidance, not grades. Competition, because of the fear of public humiliation, has a negative effect on adult learning. "Self evaluation" often is ineffective since adults tend to bite off more than they can chew. Guidance, thus, should involve both praise when due and criticism in a tactful and private way.

These and related concepts must be woven into a vocational-technical doctoral program if it is to be exciting and vitalizing to both the mature individual it will educate and the mature individuals that person will serve.

Utilizing Community Facilities as a Teaching and Learning Laboratory

by

George A. Rietz[1]

Rutgers University is to be congratulated for assuming a role of leadership in a thorough reexamination of vocational-technical education. The writer is delighted to learn that the study includes an examination of the possible types of help available from business and industry, and other groups outside the classroom in the development of a new breed of leadership for vocational-technical education, and, of course, the end objective of students better prepared to take their places in society.

Vocational-technical education probably is today's most exciting and challenging area of education. The atmosphere is electric with the unrestrained drive in our own and every country of the world to improve the living standards of its citizens. One simple objective, basic to the success of this dynamic movement, is an adequate supply of goods and services society is demanding, but at an economically sound cost. We are again reminded of the ever-present problem of economics—how to meet unlimited wants with limited resources. The consequent explosion in demand for manpower calls for workers of all types and abilities but it is obvious that the most critical shortage is and will increasingly be of competent vocational-technical educated and trained personnel. They are at the very heart of any successfully developing industrial society. The challenge vocational-technical education faces is to prepare a large segment of our population of youth and adults to live in, contribute to, and be happy in that dynamic society. Your graduates must, of course, have "transferable" basic skills, but the accelerating rate of change makes it imperative that they also have a well-grounded education so they are able to participate successfully in training and retraining programs—on the job and during their years of employment—so as to qualify for new and changed job opportunities.

There exists today an abundance of comment on and appraisal of education in general and vocational-technical education as well. Perhaps noting only a few of these comments will provide some leads for examination of our subject, although the author wishes to disclaim full agreement with some of them. Historically, employers are quoted as saying they are looking for employees who are broadly educated or well-rounded. A recent Ford Foundation publication includes such statements as: "Today's world of work demands richer general education than most traditional vocational programs offer. Not often enough are students trained in general work skills that are transferable from one occupation to another. Maintenance of two separate systems is not only wasteful for educational enterprise as a whole, it also restricts educational opportunities for youngsters."[2] In a recent National Association of Manufacturers publication it was reported that, "Public education can best serve to advance technology and the economy by looking to education, leaving job training mainly to private industry."[3] At the August, 1965, White House Conference on Education, a question was asked whether vocational educators should be technicians who have been taught to teach, or teachers who have been given skills courses. Walter Carey maintains that "Practical experience should be the number-one priority requirement in the certification of vocational training teachers" and that . . . "the vocational teacher whose background is entirely theoretical or who has been away from practical work in industry for a long time, generally will prove less effective—and less helpful to his students—than the industry-trained instructor who has practical experience in his recent background and who is up-to-date on changing technology in his specialized field."[4] According to the American Association of School Administrators, "The school that uses its community as a teaching and learning laboratory is using live ammunition. Pupils of all ages are interested in what goes on around them, they wish to learn more; and they can remember and use what they have learned."[5] Alfred North Whitehead comments, "For a successful education there must always be a certain freshness in the knowledge dealt with. It must either be new in itself, or it must be invested with some novelty of application to the new world of new times."

It would appear abundantly clear that vocational-technical educators should look beyond the campus and outside the classroom as a part of the movement to up-grade this area of education. But why should business and industry cooperate? Why has the number of employees devoting full-time working with educational institutions and groups increased so rapidly over the past 25 years? Why do industrial organizations make substantial financial contributions to support education in a broad variety of ways? And why do industrial organizations develop and make available to educators and institutions supplemental educational materials and devices at no charge? Rest assured there is abundant justification for such activities and cooperation. Many enlightend business leaders justify educational programs and cooperation as appropriate responsibilities of any "corporate citizen." Some may point to more specific justifications such as the fact that industry currently spends in the neighborhood of $5 billion annually to educate and train its own people—after employing them—and that it makes just as much sense to assist in the development of manpower for the future as it makes sense to develop new products. Many feel that education is a total community responsibility and that some of the unique resources of business and industry should be utilized for the enrichment of education. Admittedly, there was considerable suspicion among educators regarding industry's motives during the early days of cooperative undertakings. That some of this suspicion still prevails among some educators was recognized in a recent talk by the coordinator of school and college relations of a large company in California. "If I were to suggest a word of advice, it would be that the development of such programs seldom are initiated by the business community. Business still has a justifiable fear of being accused of using the educational system for its own purposes. The initiative must come from the academic community with a presentation and challenge to business of what is to be accomplished."[6] Writing in the *Saturday Review*, October 17, 1964, Dr. A. L. Ayars refers to the change in attitude and understanding by both educators and business men, as a result of cooperative work, to the end that educators have begun to recognize business men "as helpful partners, pursuing their own enlightened self-interest through promotion of the general good." In the same article he gives a figure of $160 million "as a modest estimate of the total expenditure for educational materials, programs and services (for elementary and secondary schools) by business and industry in 1963." Education will find today's industrial personnel engaged in educational relations work quite knowledgeable, and certainly receptive and alert to proposals which are sound and offer promise of contributing to improved education. The only defensible basis on which educators and business men alike should engage in activities is the degree to which they will make a positive contribution to the basic educational purposes for which the educational institution exists.

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[1] Mr. Rietz is Consultant in the Education Relations Department of General Electric Company, Ossining, New York.

[2] The Ford Foundation, **Ford Foundation Grants in Vocational Education.** New York: Ford Foundation, Office of Reports, September, 1965, page 3.

[3] National Association of Manufacturers, **NAM Reports.** New York: Vol. 10, No. 41, October 11, 1965.

[4] Statement made by Walter Carey, President U. S. Chamber of Commerce, in a talk "Useful Education for Tomorrow's Jobs" presented to the California Industry—Education Council, Los Angeles, December 7, 1964.

[5] American Association of School Administrators, **Staff Relations in School Administration: Thirty-third Yearbook.** Washington, D. C.: American Association of School Administrators, a department of the National Education Association, 1955, page 204.

What kinds of possible assistance can educators in vocational-technical education reasonably expect from business and industry? I believe it falls into about four categories: (1) Financial support of educational institutions or specific educational projects; (2) Programs developed to make facilities and know-how of business available for the benefit of teachers and students; (3) Aids and materials available to teachers for supplemental classroom use; and (4) Participation in conferences wrestling with problems of education. Financial support ranges from unrestricted grants to support educational institutions or organizations to the financing of specific educational research projects. All of us are familiar with the broad variety of conferences which have wrestled with the problems of education in which representatives of industry have participated. Aids and materials developed and made available to teachers for supplemental classroom use eventually develop from joint working and understanding of the problems and need, and will naturally follow and become available after those processes. The major emphasis in this paper will be Item 2—Programs developed to make facilities and know-how of business and industry available for the benefit of teachers and students. Although laboratories, factories, and offices have been made available for many years as teaching and learning laboratories for schools and colleges, this area appears to have been tapped to the least of its potential and offers challenges and cries for innovations, particularly in the vocational-technical area of education.

Students of education have long realized the importance and, at the same time, the difficulty teachers and students who spend full time in the classroom have in keeping abreast of changing conditions and developments outside the classroom. Also, professors and teachers find it difficult to pass on to students what they themselves do not know. According to Dr. Clarence Leuba of Antioch College, "Fundamentally, learning is not just repeating something; learning is connecting that something with as many as possible of the situations in which it will be useful." Educators will find that benefits from carefully developed programs with business and industry need not be limited to: giving students a realistic picture of jobs; seeing the importance of English, mathematics, science, economics, and other courses to success on the job; seeing the state of the art or technique as practiced today; and learning that students lacking a good educational foundation experience difficulty in first getting a desirable job, and will also thereafter have difficulty with necessary continuing education and training programs available while on the job. Important as these are, there are other opportunities to supplement and reinforce classroom learning. Students have been motivated to take their studies more seriously and to look forward to a future of exciting and rewarding careers rather than a "life sentence of drudgery." There can be opportunities to observe innovations and anticipate changes which they seem to foreshadow. Fears and frustrations from "threats" like automation may be lessened by seeing them meet economic and social testing, which often "cuts them down to size." Other valuable and stimulating opportunities exist for a better understanding of the American business system in which they may be employed: seeing how anxious most employers are to assist employees to earn promotions and that the starting job need bear little resemblance to future employment; witnessing the many opportunities for continued education, training and retraining on the job; and observing the existance of greater optimism and longer range planning and projection found in business organizations, as well as the high degree of concern held for the individual and his happiness. Facilities of business and industry can be additional resources to assist educators not only in teaching the student how to learn but also launching him on a lifelong career of continued learning.

Within any sizable industrial or business establishment there are not only evidences of many of these things to be observed, but also there are records of changes and conditions which teach impressible lessons. Statistics of industry indicate that 20 years ago approximately 25 percent of the work force was employed on unskilled jobs, whereas only about 15 percent is today. Table I shows the change in makeup over an eight-year period of the total employees in one of our large manufacturing locations. Employees are classified in four categories. Over an eight-year period employees in managerial, supervisory, professional, and specialty areas increased 43 percent; secretarial, clerical, and nonprofessional specialists decreased 27 percent; skilled workers increased 10 percent and unskilled employees decreased 28 percent.

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[6] Statement made by A. J. McNay in a talk "Ways to Achieve Close Working Relations Between Industry and Education" presented to the California Industry-Education Council, Los Angeles, California, April 13, 1965.

TABLE I

Change In Pattern Of Total Employment Over An Eight-Year Period—A Large Diversified Operation

	1954	*1962*	*8-year change*
Salaried			
Exempt (managers, supervisors, professional specialists, etc.)	23%	33%	+43%
Nonexempt (secretarial, clerical and nonprofessional specialists)	29%	21%	−27%
Hourly			
Skilled (require considerable training)	30%	33%	+10%
Unskilled	18%	13%	−28%
All Employees	100%	100%	

At another location where about 400 people apply for employment during a typical week, figures show that additional education is important to securing a job as well as to continued success on the job. Table II shows that among the applicants 72 percent are high school graduates and 28 percent are high school dropouts. Of the applicants hired, 86 percent are high school graduates, and only 14 percent are dropouts. This table also shows the plant's considered judgment of the probability that employees in those two categories will advance to higher salaried jobs or to higher hourly paying jobs, as well as of their probability of later failure on the job.

Industry and business offer employees opportunities to participate in numerous educational, training, and retraining programs to upgrade their abilities. Many have records which provide convincing evidence that the employee lacking a good educational background has greater difficulty in successfully completing the courses. In looking at Table III it should be borne in mind that it treats training programs for highly-skilled mechanical jobs, that the participants were employees who had been carefully screened before they were hired and were performing satisfactorily on their current jobs. Yet the figures carry a solemn lesson as to the relative probability of success among high school graduates as against those who did not finish high school.

TABLE III

Grades Attained on In-Plant Courses

Grade	*High School Graduates*	*Dropouts*
A	36%	17%
B	46%	35%
C	18%	44%
D	0%	4%

Information such as contained in these three tables represents strong reinforcement for advice and opinions extended by educators, industry representatives, and the statement of Lawrence Rogin, Director of Education, AFL-CIO, "The best assurance of future job security is a good general education. Tomorrow's worker will need to read with understanding, write clearly, and figure accurately, at the very least. Such basic knowledge and skills will give him the flexibility he needs to learn new techniques and adapt himself to new jobs."

The writer is not familiar with many cooperative programs between industry and vocational-technical education, but a listing of some typical cooperative ventures in other educational areas may be of value. In the fields of engineering and the physical sciences, leading industries have pursued several different types of cooperative ventures with colleges and universities for some 50 years in attempts to help educators find answers to some of their problems. Similar cooperative ventures at the secondary school level have been most pronounced since World War II. The early and continuing programs with engineering and the physical science areas took such forms as: summer employment of professors in laboratories and departments which conduct work matching their fields of instruction; summer conferences in plants to bring professors up-to-date; furnishing research and engineering development articles to professors; providing college laboratories with needed instructional and research devices and equipment; consulting arrangements; business and industry representatives participating in joint conferences; etc. These activities with college professors all provided the "multiplier factor" for the experiences they had and the information they gained could be communicated to students when and as the professors chose. Some of these same programs, or similar ones such as internships, etc., should certainly be feasible and equally valuable to professors in the vocational-technical area. Just as this type of cooperation over the years has been given no small measure of credit for the rapid growth and sound development in many areas of Ameri-

TABLE II

			Probability of Continued Success		
			Probability of Advancement		
	Applicants	*Of Those Employed*	*To Salaried*	*To High-Hourly*	*Probability of Failure*
High school					
Graduates	72%	86%	Open	Open	Low
Dropouts	28%	14%	Seldom	Limited	High

can industry, it would seem to offer considerable promise in helping to develop the new breed of leadership for vocational-technical education at the university level, while at the same time contributing to continued growth and development of our industrial society.

Nearly 100 American colleges and universities offer cooperative education programs which involve a schedule of rotation between academic study and work assignments. Cooperative programs with industry were started about 50 years ago, initially in engineering, though they now are available in many other fields. Cooperative education has demonstrated its ability to increase motivation, develop early maturity, enhance career guidance and provide an adequate means of financing a college education. In passing, it is perhaps interesting to note that some studies of high school dropouts show that a smaller percentage held after-school and Saturday jobs than did those students who finished high school. Whether the student learned of the need for more education while holding a part-time job, or the job made school appear more attractive, may or may not be important.

It is interesting, but somewhat surprising, to find that secondary school teachers of science, mathematics, social studies, and the guidance counselors are the ones who seem to be making the greatest use of available cooperation and materials from business and industry. Perhaps they have taken seriously Alfred North Whitehead's remark, "There is only one subject matter for education, and that is life in all its manifestations." Realistically, they have found it necessary to utilize teaching aids of all kinds to keep up-to-date. Textbooks and standard teaching materials can't keep pace with new findings and new processes and at times the only source of current information, they found, is material and help from sources outside the standard teaching materials field. An indication of the demand from these secondary school teachers and guidance counselors can be gathered from knowing that our company has filled requests of individual teachers for more than 150 million copies of educational publications during the past 20 years.

The interest of secondary school teachers of mathematics, science, and social studies was uncovered in a study we made early in the 1940's. Asking what teachers needed to help them do a better job in the classroom resulted in discovering two clearly indicated needs. First, they recognized the need for graduate study to learn more about the subjects they were teaching. Second, they felt it was equally important to know of what use and importance the subject matter would be to their students. The physics and chemistry departments of Union College, Schenectady, New York, developed graduate credit summer courses in subject matter to meet the high school teacher's needs. In cooperation with the College we developed a schedule of trips to laboratories, factories, and offices; and talks by employees were scheduled to show how the subject matter was applied in many different areas of employment. A grant was made to the College to cover all expenses of the teachers attending the six-week Fellowship Program. Two results were quickly apparent which prompted the sponsoring of similar programs in science and others in mathematics at several universities located reasonably close to major Company operations. Teachers became so excited about their subject matter that approximately one-third continued graduate study in subsequent years. Their principals reported that graduates were doing better teaching, attracting larger classes, had earned additional promotions, and were more active in professional programs. Teachers reported that they could get more students to take their courses and to study seriously, for the teachers "had been there" and knew what they were talking about. In addition to some 4,000 secondary school teachers and counselors who have been through 80 of our sponsored summer programs during the past 21 years, tens of thousands of teachers and counselors participated in similar programs—except for the industrial contact—under programs sponsored by NSF, NDEA, and industries.

Since 1960 certain of our summer programs have been available to social studies teachers (economics), and others to secondary school guidance counselors. The guidance programs require much more extensive participation by industry. As many as 150 employees are involved at some locations, for the counselors not only study most major occupational areas in depth with employees in each area, but also "shadow" employees on the job for an extended period, have private interviews with various types of employees, etc. Certainly similar types of cooperative programs could be developed for selected vocational-technical teachers or professors.

Some industry cooperation has been extended for educational programs in the service areas. For example, a grant was made recently to a university to develop and enlarge a post-high school cooperative distributive education program to meet the growing demand for midmanagement and service management personnel in all areas of wholesaling.

About 30 years ago many vocational and technical teachers came from industry or were college graduates who had prepared for work in engineering or technical fields. This has not been so prevalent in recent years. Unfortunately, many of them did not keep abreast of technological changes and most of them are about to retire. There are currently capable and successful men in business and industry who feel their aptitudes and interests are for teaching. Perhaps schools should more actively exploit such potential resources. Most of those whom the writer has known who went into college or high school work appear to be happy and successful, although they were not particularly unhappy in business. Also, the real or apparent difference in salary levels has not been a major obstacle to such transfers and preparation.

The efforts of Rutgers and other universities are timely. They recognize the challenge to develop programs that will attract and develop professors, teachers, and administrators who are competent, and that will keep them and their professional performance abreast of changes that occur in the vocational-technical area. Business and industry, along with other elements of society, have developed or can develop an understanding of the importance of this undertaking. It is safe to assume that some companies will be approachable and receptive to sound proposals for cooperation. Will educators assume the initiative in getting their cooperation?

The Role of Industry in the Development of Vocational-Technical Education Leadership[1]

by

Jerome Kurshan[2]

The subject of this discussion is an invited reaction to the paper by George A. Rietz prepared for this symposium. His report will be used as the framework for further emphasis, comment, and amplification. Quotations, not otherwise identified, have been taken from that paper.

Three key questions face this symposium and provide the focal points for my comments. The first question is: What will be the challenge of preparing youth and adults for the "world of work" during the next decade? "Graduates must have 'transferable' basic skills, but . . . also a well-grounded education so they are able to participate successfully in training and retraining programs." There is a general unanimity that the schools should teach fundamentals, leaving specific job training to industry. This is a consistent and well-established viewpoint. Ten years ago the participants in the prestigious Conference on Skilled Manpower[3] strongly urged the same approach. That conference also emphasized that the concern of secondary education should be fitting youth for life, not for a specific job. These considerations by no means diminish the coupling required between industry and educators. In the design of curricula and in counseling students on occupational decisions, knowledge of industry's requirements is essential. Educators must take the initiative and gain this knowledge through joint committee activity as well as direct participation in the industrial scene via work and research assignments.

In facing the challenge of education for life, we should keep in mind the new main streams of technological development. We emerged from World War II into an electronic age which is continuing to open new frontiers through solid state devices and integrated circuits. We are also on the threshold of a computer age which will see computers used not only by experts, but also directly by the average individual. Finally, as our knowledge of life processes increases and reveals tremendous potential to understand and control biological phenomena, the life science will see a rapid expansion as they closely interact with other technical disciplines.

A second key question is the relationship of our discipline to the problem of man, education and work—what contribution can business and industry make to the development of a "new breed" of vocational-technical education? Cooperation between industry and education has been justified as an "appropriate responsibility of any 'corporate citizen'" and as a corollary to industry's own investment of "$5 billion annually to educate and train its own people." Keep in mind, however, that in vocational-technical education the interaction is likely to be at the plant level, not at the corporate level. And at the plant level the contribution of time, facilities, and work opportunities has to be more clearly seen in terms of the direct pay-off.

In discussing the assistance to be expected from business and industry, Mr. Rietz puts his major emphasis on: "Programs developed to make facilities and know-how of business and industry available for the benefit of teachers and students." This benefit is discussed largely in general terms of motivating students. The idea of cooperative programs, however, needs more emphasis. These are well established in the extremes of engineering and secretarial work; they would be equally valid in vocational-technical employment.

The third key question concerns the optimum preparation for the leaders in vocational-technical education. Industry can play a role here as it has in other branches of secondary education and in the universities. "Some of these same programs . . . should certainly be feasible and equally valuable to professors in the vocational-technical area." However, this cooperation must be recognized as a two-way street. When industry offers faculty people summer positions, sabbatical employment, consultantships, and materials or other support for research, it is because industry is directly interested in the special and unique talents of these faculty members, in the results of their research and in the students they are training. Industry will be more willing to stretch or expand its established programs to aid the development of vocational-technical educators where there are direct mutual benefits. For example, summer employment which fills in for vacationing cratsmen is one possibility.

Some form of educational subsidy would greatly help in enabling educators to renew their industrial experience. A subsidy could bridge the gap between a man's normal salary and his short-term value to the company. These externships should be an important part of the graduate degree program.

The challenge of the Russian Sputnik produced tremendous interest and activity in science and engineering education. Today the even worthier challenge of the Great Society provides the justification and motivation for developing a new breed of leadership for vocational-technical education. Industry and business clearly have a stake in this, too.

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[1] A reaction to the paper of George A. Rietz.

[2] Dr. Kurshan is Manager, Research Services Laboratory, David Sarnoff Laboratory, Princeton, New Jersey.

[3] National Manpower Council, "Improving the Work Skills of the Nation," Columbia University Press, N. Y., 1955.

Considerations in the Development of a Doctorate Major Program in Vocational-Teacher Education

by

Byrl R. Shoemaker[1]

I. THE CHALLENGE OF PREPARING YOUTH AND ADULTS FOR THE "WORLD OF WORK"

Vocational education is not the total answer to the overall unemployment problem brought about by cyclical and structural changes in our employment pattern. Vocational education is one of the answers for unemployed individuals who wish to prepare to reenter the labor market, and for youths in high school or post-high school levels who are preparing to enter the labor market for the first time.

I would predict that when the answer to the problem of unemployment is found, vocational education will have a prominent part in the solution. This prediction is based upon the concept that the new technological revolution brought about by automation has placed a premium upon preparation in skills and technical knowledge for new jobs, and has diminished the need for the unskilled worker.

As the governmental unit in our society works frantically to develop the "Great Society," a greater and greater reliance is being placed upon the concept of education as the only ladder out of a continuous poverty cycle. Secretary of Labor Wirtz made this challenge clear as he made this statement before the general subcommittee on education in the National Congress.

> There was a place in the old work force for the boy or girl who left high school, either dropping out, or with a diploma in hand, and entered the work force with no skilled training. He or she could, and did take an unskilled job and worked up from there. Now, such jobs are vanishing, and so, today, there are 700,000 sixteen to twenty year olds out of work and out of school. Every American youngster has to be given today, as a part of his education, some know-how about making a living, which means for a great many of them, vocational education.

A review of a June, 1965, report on unemployment in Ohio reveals that when the unemployment of males is considered by each age category, the largest percentage of unemployment exists within the youth between the ages of sixteen and twenty-four, and that the vast majority of the unemployed in this category are classed as unskilled workers. This points up the great need in the youth group for preparatory training for employment.

The need for upgrading courses for employed workers is in evidence, particularly for the worker thirty-five years of age or older. Both upgrading and retraining courses are important for the worker in the forty-five years of age and over category.

Looking at the pattern for women, we find again that unemployment is highest among the unskilled youth group. A review of the unemployed youth pattern would indicate that there is a need for training girls in occupations other than clerical and business occupations. Other occupations, however, such as cosemetology, dental assistants, medical assistants, laboratory assistants, and technical areas such as food service and food management, child care, etc., should be given consideration for the training of girls and women.

The pattern of employment and unemployment for women points up the need for the upgrading of skills of employed women workers in the middle-age range and the need for the retraining of persons who are reentering the labor market at about age thirty-five. There is little indication, however, of the need for the training of older women workers, since they seem to retire earlier than men, or else do not change jobs as an older worker.

Reports from both the Ohio State Employment Service and the United States Department of Labor point out that the jobs available between 1960 and 1970 and subsequent periods of time will require skills and technical knowledge, and that the unskilled person earning his living with his back is in danger of becoming obsolete. (See chart page 46.)

It is a professional person's desire, and an administrator's obligation, to project his plans as far in the future as possible. I find it difficult, however, to talk now about the preparation of youth or adults for jobs to be available in 1975. It is true that for some the academic studies will enhance their chances of employment. The problem, however, is stated succinctly by Grant Venn in the book entitled *Man, Education, and Work*, published by the American Council on Education.[2]

> Their assumption seems to be that the best and only necessary preparation for a job today is the longest possible immersion in academic and professional subjects.
>
> This assumption at once fails to heed the factor of youth unemployment and misapprehends the relevance of general education. The liberal, or academic, studies *do* enhance the long-range civic and occupational competence of a person; they *do not*, at least below the baccalaureate degree level and as a rule, qualify young people for meaningful job entry. The technological work world is one of specialization and sophisticated skills, and being a 'bright young man' cuts relatively little ice with employers looking for skills to do some specific kind of work.

It is impossible for me at the present time to project the job pattern in 1975; but, it is within my range of abilities to provide for sound entrance programs today, and to encourage a flexible curriculum, flexible facilities and flexible program offerings for those vocational education programs now functioning within our State.

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[1] Dr. Shoemaker is Director of Vocational Education, State Department of Education, Ohio.

[2] Venn, Grant, Man, Education, and Work. Washington, D. C.

The term "flexibility" has become quite popular and, in too many cases, may mean the concept of lowering the investment of time by the student in a program of vocational education in order to enhance his opportunities to enroll in courses of mathematics and science and other related disciplines. There is a real question as to whether this type of flexibility improves either his vocational education or his abilities in mathematics and science.

The Division of Vocational Education, in cooperation with the Ohio State University, has completed two research studies involving the question of depth of training for students enrolled in vocational education.

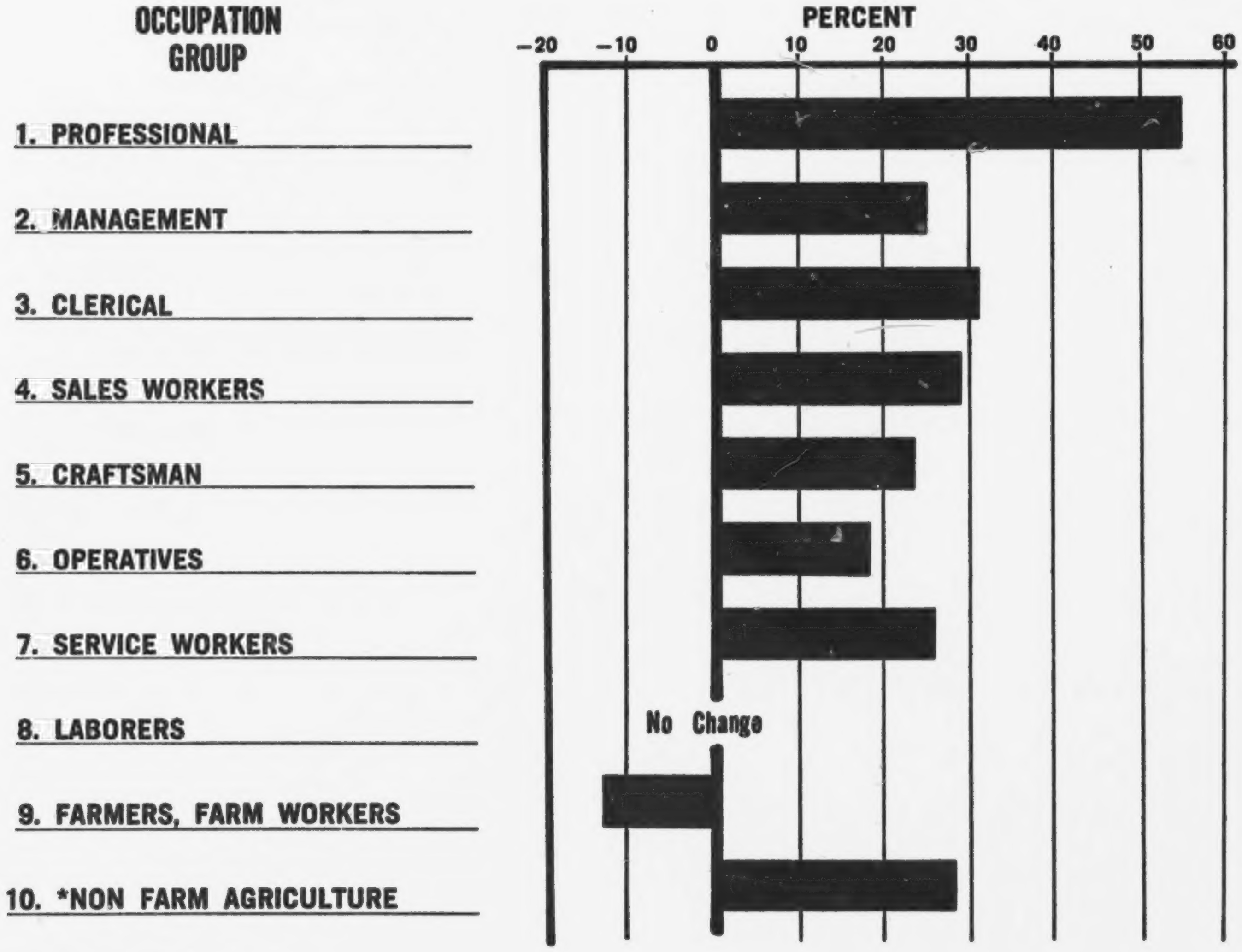
From the one study, it is evident that students enrolled in depth programs of vocational education achieved significantly higher scores on trade achievement tests than did those students who were enrolled in programs requiring less of the students' time for vocational education and making available a greater portion of the students' time for liberal and academic studies.

A further study of the report reveals the fact that students enrolled in a more flexible program requiring less time in the vocational areas do not achieve more in the area of mathematics and science than those who continue in depth programs of vocational education. To the contrary, those students who remained enrolled in depth programs in vocational education showed a significantly higher achievement in understandings of principles of mathematics and science than did the students in the more flexible programs.

The other research study, also concerned primarily with the area of trade and industrial education, points up the factor of the importance of competence in occupational skills and knowledges on the part of the teacher in the area in which he is teaching as being the one teacher-factor making a significant contribution to student achievement. Other significant findings of this research are:

1. The expenditure spent per student in Ohio's trade and industrial programs as viewed in this study was a significant contributor to student success. The amount

PERCENT CHANGE IN EMPLOYMENT IN OHIO — 1960-1970



SOURCE: OHIO BUREAU OF UNEM. COMP.
*STATE DEPT. ED. STUDY

spent per student in the high-achieving groups was over $100 more than the amount spent per student in the low-achieving groups.

2. Teacher personality, in terms of self-concept, is an indicator of how students will achieve. Teachers of the high-achieving groups displayed a higher Intellectual Quality concept than did teachers of the low-achieving groups.
3. Local supervisors' ratings of teachers are significant indicators of quality learning situations.
4. Teacher, age, grade level completed, years of teaching experience in present trade, total teaching experience and degree held after reaching a certain point (depending upon the trade area) do not appear to be significant factors in student success. Teachers industrial experience is a significant positive factor in relation to student achievement.
5. Trade and industrial education teachers are considerably more motivated than the normal population.
6. Student intelligence is a factor in trade achievement; however, some of the low-achieving schools reported mental maturity scores at or above those of the high-achieving schools. The teacher and the environmental factors also contribute to the differences found in the students' achievement.
7. Teachers who are creative, as measured by the Opinion, Attitude and Interest Survey, are typically rated by local supervisors as poor or poorer performers. Students of teachers who are identified as creative but have low Intellectual Quality scores achieve at a lower level than do other students.
8. Facilities as evaluated by area supervisors are a factor in quality programs. Shop space and equipment are essential for quality performance by students.

There are those who suggest that the problem of training students ought to be turned over to the industries. Such statements lack an understanding of the competitive nature of modern industry and business and underestimate the ability of the public educational sector of the total education program to provide instruction for entrance into business and industry, and for upgrading courses for employed workers on a reasonable basis from the standpoint of both cost and effectiveness.

One indication of the unwillingness of business and industry to train an adequate number of workers for their employment needs is evidenced in the area of apprenticeship training. It is estimated by the United States Department of Labor that a total of five million new skilled workers will be needed between the years of 1960-1970. The industrial pattern for training these people within industry is the apprenticeship training program. At the present rate of training through qualified apprenticeship training programs, there would be a shortage of half million a year over each year of the projection.

Vocational preparatory training, upgrading, and retraining can be done effectively and economically through the public education sector of our society. The modern vocational education programs will be characterized by flexible facilities, an evolving curriculum, up-to-date equipment, a broad preparatory vocational-technical program at the high school and post-high school levels, a continuing educational program for upgrading of employed workers, a continuing retraining of the unemployed workers, and last, and perhaps most important, a competent staff and leadership to assess the needs and to adjust the programs.

II. HOW DOES YOUR DISCIPLINE RELATE TO THE PROBLEM OF MAN, EDUCATION, AND WORK?

A definition or description of vocational education could be worded as follows:

The primary purpose of vocational education is to equip persons for useful employment. The program is designed to serve the needs of people in two distinct groups. First, adults who have entered upon, and second, youth and adults who are preparing to enter occupations in agriculture, business, home making, distribution, trade, technical, and industrial fields requiring less than a college degree.

Vocational education helps to give definite purpose and meaning to education by relating it to occupational goals. It provides the technical knowledge and work skills necessary for employment; but, it is more inclusive than training for job skills. It develops abilities, attitudes, work habits, and appreciations which contribute to a satisfying and productive life.

Vocational education contributes to the general educational needs of youths, such as citizenship, respect for others, acceptance of responsibilities; but, it makes its unique contribution in the field of the preparation for work. It is a part of a well-rounded program of studies aimed at developing qualified, efficient workers. It recognizes that the American worker should be competent–economically, socially, emotionally, physically, and in a civic sense.

The uniqueness of the vocational education program in our public schools is in its contribution to the skills and technical knowledge required for employment. Recognizing the needs of youth and adults for instruction in the field of occupations, no educational program or school can be classed as comprehensive unless the educational offerings include a comprehensive vocational education to serve youth and adults.

It is my belief that vocational education is not a discipline, but that it cuts across and draws content from a number of disciplines and from the practical work of the world. The contribution of vocational education is the blending of theoretical knowledge from the disciplines with the practical experiences and requirements of entry jobs, recognizing the nature of the world of work.

In vocational education we weave together the principles of mathematics, science skills, and technical knowledge into a mix which will help youth and adults to enter and adjust to employment opportunities or to upgrade themselves in their chosen field of work.

A preparatory program of vocational education is essentially a "core" program built around the "pegged-core" concept of Dr. Alberte, Professor Emeritus, Ohio State University. The program makes significant use of the concepts or principles of learning which point out the importance of relationship of knowledge taught to effective use by the student of such knowledge.

Some principles of learning serving as the bases for instruction in the field of vocational education are as follows:

1. We learn best when we are ready to learn. When we have a strong purpose, a well fixed reason for learning something it is easier to receive the instruction and to make progress in learning.
2. The more often we use what we have learned the better we can perform or understand it.
3. If the things we have learned are useful and beneficial to us, so that we are satisfied with what we have accomplished, the better we retain what we have learned.
3. Learning something new is made easier if the learning can be built upon something we already know. It is best to start with simple steps which are related to things we can now do or which we already understand, and proceed to new and more difficult tasks or ideas.
5. Learning takes place by doing. Before the learning can become complete, we must put into practice what we are attempting to learn.[3]

It is my opinion that the most significant contributions of any of the social sciences to the field of vocational education have come from the field of psychology.

Early leaders in the field of vocational education, Prosser, Allen, and Wright, and others, came from disciplines allied to the field of vocational education, and made a great contribution to the development of a sound philosophy for vocational education. These philosophers were followed by the development of practitioners, who have demonstrated skill in the implementation of philosophy into practice. The skills, dedication, and ability of the practitioners have been demonstrated in such programs as: the W.P.A. emergency program during the latter years of the 1930 Depression; the war production training program to prepare the workers for our Arsenal of Democracy; the veteran's training and education program following the end of World War II, in which ten million veterans were enrolled in programs at a cost of twenty billion dollars; the Manpower Development and Training Act presently functioning to retrain the unemployed; the Vocational Education Act of 1963 providing for expanded services in the field of vocational education; and the Area Redevelopment Act funded by the National Congress for purposes of assistance to special disadvantaged areas having both persistent and substantial unemployment. Vocational education has never failed to meet an emergency when dollars have been made available to provide for the instruction facilities and equipment.

Over the period of the last thirty years, people in vocational education have existed to a large degree on the principles, philosophies, and practices developed by the early philosophers and practitioners. People working in the field of vocational education have been driven to keep up to date by the annual built-in evaluation factor of the placement of people prepared for entrance into employment. As the skills and technical knowledge of our work force must be upgraded, so the principles and philosophies and practices of vocational education must be checked and upgraded. Vocational education is encouraged to give careful consideration to this need by the fact that under the Vocational Education Act of 1963, the total program of vocational education in the Nation will be evaluated every five years.

Creativity is important in the further development of vocational education today. Such creativity and implementation of creative ideas require a depth of knowledge within one or more of the areas of vocational education. A person who has worked for a period of time in vocational education and has gained an understanding of present operations, is much better able to add to the store of knowledge and experiences and contribute ideas for progress and development than a person who has to rediscover many of the factors that have been known for a period of time in the field of vocational education.

Administrative and leadership services concerned with creativity and program development are enhanced by a depth of experiences in vocational education. Too often the values of such experiences are not understood in the haste to make vocational education leadership socially acceptable through the appointment of people from related disciplines to leadership positions.

The problem is, however, that too few vocational educators have had the breadth of experiences which will enable them to work creatively over the whole spectrum of vocational education opportunities and have had little opportunity to gain the knowledge and experiences in related disciplines which would help them to establish principles which can be applied to many similar situations in the field of vocational education. I believe that creativity, leadership ability, and judgment can be enhanced and improved by an understanding of selected principles in such related disciplines as mathematics, physical science, social science, and economics.

During my period of study toward a Ph.D. at Ohio State University, I had the unique exeprience of participating in seminars organized and conducted by Dr. Roald Campbell, now Dean of the College of Education at the University of Chicago, and Dr. John Ramseyer, now chairman of the School of Education at the Ohio State University, with the assistance of Kellog Foundation money. These seminars were opened to students taking a major in the field of school administration, and were built around the concept of interdisciplinary approaches. In these seminars there were full-time professors from psychology, political science, sociology, and education. These seminars were undoubtedly the finest educational experience that I had during my doctoral program.

The center point of the seminars was based upon educational concerns or practices with the disciplines providing their insights, principles, and practices as they applied to the educational problem. I believe this approach was much better than if I had had separate courses in each of these related disciplines. One seminar was directed to the problem of identifying a common community and of techniques for moving a community in response to an educational problem. The second seminar was concerned with leadership in the field of education.

Since the amount of time available for the student to invest is limited, enrollment in programs planned for the preparation of people to work in depth at a discipline may waste the time of the person preparing as a practitioner in the field of vocational education. Exposure to programs designed for practitioners and stressing principles which may be applied to problems in vocational education may be more feasible.

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[3] Leighbody, Gerald B., **Methods of Teaching Industrial Subjects.** Albany, N. Y.: DelMar Publishers, Inc., 1948, pp. 2, 3.

The content of a doctorate of education program for the preparation of administrative and leadership personnel in the field of vocational education should provide:

1. Instruction in principles of educational philosophy, psychology, sociology, law, economics, employment trends.
2. Instruction in research practices from the standpoint of a person becoming a research consumer.
3. Skills and experiences with basic statistics, leadership techniques, and communications media.
4. Depth of understanding in vocational education practices and trends, building planning, and equipment purchasing.
5. Acquaintanceship with each of the vocational education services, such as agriculture, business and office education, distributive education, home economics, trade and industrial education.
6. Instruction in principles and practices in the field of post-high school technical education.
7. An understanding of the Federal Vocational Education Acts.
8. Principles and practices of funding vocational education programs without regard for the practices followed in any one state.

III. HOW CAN EDUCATIONAL LEADERSHIP FOR VOCATIONAL EDUCATION BE BEST PREPARED?

Without question, I believe there is a place for a coordinated program covering all vocational services in the training of leadership personnel for the area of vocational education.

There should be a program for the doctorate of education without identification with a special vocational education service. There still is a place, however, for a doctorate of education program providing greater depth in an individual service area, when such persons are preparing for teacher education within one of the service areas, or as administrative personnel specifically within that one field.

It is my judgment that any program planning to prepare practitioners at the doctorate level must either involve an internship or have a prerequisite of prior or concurrent experiences in administration of vocational education if such a program is to provide the persons needed for leadership positions. The amount and nature of the internship should be dependent upon the background of the person participating in the graduate program. Internship must involve a depth experience in a meaningful situation where there is a quality program or a quality program is developing.

I have had the opportunity to observe the so-called project approach in the field of administration in which a class in the area of study would be involved over three quarter periods with one project in a local community. My observation of such a project approach would lead me to believe that the students involved gained only a fragmentary understanding of the principles and practices which the professor hopes will be the outcome of the program. The tendency is to become too involved in the problem and the project and to make a division of responsibilities in order to get the job done. No responsibility is placed upon the individuals in the class for the outcome of the program or project should the suggestions be adopted by the local community.

To be meaningful, an internship to prepare a vocational administrator must involve all facets of the vocational education program, and all vocational education services. It must involve not only school relationships, but business and industrial relationships. The internship must provide experiences involving staff personnel, curriculum, student personnel, physical facilities, and program evaluation.

The graduate from a doctorate of education program for the preparation of administrators and leaders in the field of vocational education should be equipped with:

1. A depth of understanding of the principles and practices and modern trends in the field of vocational education.
2. An understanding of the principles in the related disciplines which will enable them to both develop and implement changes needed in the vocational programs and to adjust to the rapid changes in business and industry and our modern society.
3. Leadership skills needed to work effectively with teachers, students, school administrators, business and industry, and the public.
4. An ability to be a good consumer of research.
5. An understanding of employment practices and trends both within the state and within the Nation.
6. An understanding of legislative patterns and trends and principles of laws.
7. Experiences in coordinating the knowledge and skills identified above to work effectively on the practical problems of the development and improvement of vocational education programs for youth and adults.

It is suggested that course work be considered for the content areas; seminars be planned for the integration of vocational education principles and philosophies with principles and practices from the various disciplines; and an internship or the equivalent in evaluated prior experiences, be incorporated in a doctoral program to enable the person enrolled to apply the knowledge gained to practical problems in the field of vocational education.

Considerations in the Development of a Doctorate Major Program in Vocational-Technical Education[1]

by

Burr D. Coe[2]

I. *What Will Be The Challenge?*

1. Dr. Shoemaker reviews the need for skilled workers and the needs of youth and adults for training. In the face of the incontrovertible need for specialized training some persons persist in recommending more academic studies and courses in families of occupations believing that this makes a person more employable. Shoemaker is highly skeptical of this and I agree with him. So do our trade advisory committees. We need more vocational training in depth, not less. He cites research studies to substantiate that training in depth results in better mechanics as well as better understanding of science and mathematics.
2. The key to a successful vocational education program is good teachers and trade competency is the first requirement for this kind of teacher. Experienced administrators well know that the quickest and most effective way to improve any school is to get better teachers. They must create working conditions which keep them and encourage their growth. Any doctoral program should include work in human relations and personnel administration.
3. Dr. Shoemaker believes that the foremost challenge to vocational school administration is to continue what has been done, but to do it better and to expand the program so as to include more students and more diversified programs.

II. *Contribution of the Discipline (School Administration)*

1. Many attempts are being made to redefine vocational education—sometimes in order to obtain Federal aid for types of programs never intended by Congress to qualify. I was pleased to note that Dr. Shoemaker emphasized that "the primary purpose of vocational education is to equip persons for useful employment." Any attempt to negate this purpose should be and will be vigorously resisted. Any dilution of vocational education by the inclusion of non-vocational objectives will weaken the program and will eventually be rejected by students and employers.
2. Dr. Shoemaker rightly states that vocational education is not a discipline; it is a blending of theoretical knowledge with practical experience and the requirements of the entry job. *What* we teach is determined by job analysis; *how* we teach is determined by well known psychological principles of learning.
3. Dr. Shoemaker pays special tribute to the pioneers in vocational education—"the old breed," if you will. They laid a very sound foundation of principles and practices which have provided much of the impetus for our highly successful industrial economy. Over the years, and including today, their convictions and methods have proven to be more right than wrong.
4. Programs must be updated, of course, in terms of present day needs. The best resources of personnel to do the job is the pool of experienced vocational educators who also recognize the value of and can benefit from the study of other disciplines. Seminars in disciplines such as educational philosophy, psychology, sociology, law, economics, labor problems, etc., can be helpful. The major share of time, however, needs to be spent in study of vocational education principles and practices.

III *How to Prepare Vocational Education Leaders?*

1. The doctorate program should cover a study of all phases of vocational education services, with room for specialization.
2. There should be an internship, or prior or simultaneous administrative experience.
3. Graduates from a doctoral program should have:
    - A. Understanding of principles and practices in vocational education
    - B. Understanding of related disciplines
    - C. Leadership skills
    - D. Knowledge of employment practices and trends
    - E. Understanding of legislation trends and laws
    - F. Experience in applying knowledge and skills in developing programs

Summary

1. I find myself in close agreement with Dr. Shoemaker, perhaps because we are both "old pros" in the business and have learned that in vocational school administration (as in other fields) there is no substitute for experience.
2. Here are a few convictions of my own related to vocational education and school administration:
    - A. The doctorate in vocational education should be a practitioner's degree rather than a scholar's degree; hence, only persons with experience in vocational education should be accepted as candidates.
    - B. Dedication to the welfare of the youth and adults to be served is of the highest priority in a successful school administrator; hence, the application of knowledge to the improvement of schools and programs should have heavy emphasis.
    - C. Innovation and change for its own sake, or ill-conceived, is evidence of weak or confused leadership. Outstanding educational leadership begins with an intelligent and thorough evaluation of the best of current practices.

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[1] A reaction to the paper of Dr. Byrl Shoemaker.

[2] Dr. Coe is Director of Middlesex County, New Jersey, Vocational Schools.

D. Students in doctoral programs will learn more and profit most from contact with faculty members with successful vocational education experience than from theoreticians. The job analysis approach can be applied to training school administrators as well as skilled workers.

E. As a superintendent of a vocational school system I would not hire a Ed.D. in vocational education for a leadership position who had not had a substantial amount of working experience in vocational education. Even better, I would like to have him have experience in general and college preparatory education as well. I would also like to have him knowledgeable in as many other disciplines as possible, provided the study of these disciplines do not become "the tail that wags the dog."

SUMMARY OF DISCUSSIONS

The round-table discussions focused on each of the working papers and the reactors' presentations. The following represents a synthesis gleaned from the notes of the recorders and presented by Carl J. Schaefer at the closing session of the symposium.

We have talked, indeed quite frankly, over the last two days about a common problem and one dear to our hearts. The myriad of ideas emanating from the authors of the papers, reactors, and discussions has at times been overwhelming. One cannot but think of the old adage, "Fools rush in where angels fear to tread," relative to this whole problem of the advanced degree and vocational-technical education leadership. This is but to say that focusing on the problem is like opening "Pandora's box," which I'm sure many here today will agree may have been better opened a decade or so ago.

Our notions have been varied, from the extremes of: "Why worry about it—there may not be a need for the end product," to "A program is needed which would encompass the better part of two years of full-time study."

Throughout the discussions the word "flexibility" appeared frequently. An appeal was made for considering a multitrack approach at the input or start which would recognize the contribution a candidate could make, although educated in another area, who now desires to prepare as an educational expert in the vocational-technical area. But at all times, each of the discussions underscored the need for maintaining a quality product at the output. The point was made that requirements of certification should not impede the progress of developing leaders merely because they cannot boast of an industrial or teaching background.

The doctoral student and his development was the central theme, when at the same time the discussants were fully aware of all the problems the mature doctoral candidate brings with him, i.e., indebtedness, family responsibilities, outside activities, and so forth.

As one discussion group summarized it: "The vocational-technical leader of tomorrow must be a user of the knowledges to do the job and a translater to put innovation into operation. He needs an understanding of the disciplines of anthropology, social sciences, sociology, economics, statistics, and social psychology so as to be able to interpret research from these fields in terms of needs of vocational education."

The program of developing such leaders must retain flexibility, be based on the background of the individual, and be able to overcome some of the barriers presently involved in unrealistic certification requirements, language requirements, and so forth.

It appears the "new look" of the vocational-technical leader, who will hold a doctorate, should radiate many skills, broad knowledges, and a high degree of diplomacy.

The approach to development of content must stem from an analysis of the role and function of the "new breed" itself. What is expected of the vocational-technical leader of the future? Will he be an administrator, a researcher, a teacher? Will he exercise all three of these roles, or will he specialize in only one of them? These questions can only be answered through an analysis of what is needed to accomplish set goals of vocational-technical education in the years ahead.

If vocational educators (meaning the profession) have been isolated they need broad fertilization. How is this really achieved? It was suggested by you, the symposium participants, that this could be accomplished through a program which encompasses seminars, internship, and reading so that the whole program becomes a laboratory as contrasted to a series of courses. It was suggested that the use of a continuing-type seminar throughout the doctorate be utilized to "tie together" and show the relevance of knowledge gained from other disciplines to the ongoing problems of man, education, and work.

Deep concern was expressed for providing proper financial support and assistance to candidates who have been selected to pursue the advanced degree program. Talent should not be lost due to the inability to support oneself (and in many cases one's family) in a reasonable manner.

The notion of an internship of some depth was heartily supported. It was agreed the cooperative program carried out by industry in engineering has been highly successful in producing reality for engineering students and in relating "theory to practice." Moreover, an internship to be successful must be highly individualistic and thus so structured.

The word "innovation" describes much more vividly the target set forth than does the word "change." For we have at this institution, as well as many other institutions throughout the country, nothing to change, and even the blueprinting of the doctoral major from these institutions that offer such majors would be a major step forward. This is to say, anything we do here at Rutgers, indeed, anything we can accomplish is going to be better than what the State of New Jersey has to offer. But, before we leave with the notion that what is being done at the doctoral level in vocational education in ongoing programs needs change for change-sake or is even punitive in its effort, let me remind you that if it hadn't been for these programs, you and I would not have been represented here today.

Rutgers, with its Department of Vocational-Technical Education, will strive to be innovators of some new approaches, to develop a different conceptional framework, and produce a somewhat "different end product" to meet the challenge which has been so well identified during these past two days. We invite the representatives of the other institutions who attended this symposium to join us in this endeavor.

PARTICIPANTS

The following persons participated in the various phases of the project:

Authors of Working Papers

RICHARD F. HAMILTON	Princeton University	*Professor of Sociology*
ANDREW HENDRICKSON	Ohio State University	*Professor of Adult Education*
DANIEL KATZ	University of Michigan	*Professor of Psychology*
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CARL J. SCHAEFER	Rutgers - The State University	*Chairman, Department of Vocational-Technical Education*
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Reactors to Working Papers

BURR D. COE	Middlesex, New Jersey, Vocational Schools	*Director of Vocational Education*
THEODORE J. COTE	State Department of Education, New Jersey	*Director of Professional Services*
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BERNARD P. INDIK	Rutgers - The State University	*Associate Research Specialist in Psychology*
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Discussants

LAWRENCE BARNETT	Teachers College, Columbia University
WALTER BIALOBRZESKI	State Department of Education, Connecticut
WILLIAM BINGHAM	Rutgers - The State University
LEONARD BROWN	Rutgers - The State University
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CHARLES DRAWBAUGH	Rutgers - The State University
PHILIP EDGECOMB	Rutgers - The State University
MARVIN FELDMAN	The Ford Foundaton
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ELAINE HOUSE	Rutgers - The State University
WALTER JONES	University of Pennsylvania (Professor Emeritus)
MORTIMER KREUTER	Teachers College, Columbia University
MILTON LARSON	Rutgers - The State University
RUTHERFORD LOCKETTE	Trenton State College
DAVID LLOYD	New Jersey Manufacturers Association
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KENNETH MILLER	Rutgers - The State University
JOHN MOULLETTE	State Department of Education, New Jersey
JOHN O'BRIAN	Rutgers - The State University
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JOHN O'NEILL	Rutgers - The State University
ROBERT PECKA	Western Electric Corporation
RALPH RUSH	Rutgers - The State University
MERNA SAMPLES	Rutgers - The State University
BEVERLY SAVIDGE	Rutgers - The State University
CHARLES SCOTT	University of Pittsburgh
BENJAMIN SHAPIRO	Rutgers - The State University
BENJAMIN SHIMBURG	Educational Testing Service, Princeton, New Jersey
J. STREICHLER	Trenton State College
MERLE STRONG	United States Office of Education
MICHAEL TRAVERS	Trenton State College
BRUCE TUCHMAN	Rutgers - The State University
JAMES WHEELER	Rutgers - The State University
ROBERT WORTHINGTON	State Department of Education, New Jersey
JAMES YOUNG	Rutgers - The State University

THE ADVANCED DEGREE

and

VOCATIONAL-TECHNICAL EDUCATION LEADERSHIP

THE DEPARTMENT OF
VOCATIONAL - TECHNICAL EDUCATION
GRADUATE SCHOOL OF EDUCATION
RUTGERS - THE STATE UNIVERSITY

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VOCATIONAL-TECHNICAL EDUCATION LEADERSHIP

Carl J. Schaefer
John L. O'Brian
Principal Investigators

THE DEPARTMENT OF
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GRADUATE SCHOOL OF EDUCATION
RUTGERS - THE STATE UNIVERSITY

RUTGERS · THE STATE UNIVERSITY

GRADUATE SCHOOL OF EDUCATION
DEPARTMENT OF VOCATIONAL-TECHNICAL EDUCATION

10 SEMINARY PLACE
NEW BRUNSWICK, NEW JERSEY
CH 7-7636, CH 7-1766 EXT. 6440

April 7, 1966

Dr. Sidney C. High
Project Officer
Bureau of Educational Research
Division of Adult and Vocational Education
Department of Health, Education, and Welfare
Office of Education
Washington, D.C. 20202

Dear Dr. High:

The following is the final report for Project OE 6-85-053, Vocational Education Act of 1963, Section 4(c). The report contains two sections, (1) an edited copy of the working papers and reactors' comments as well as a summation of the Symposium held on December 17-19, 1965, focusing on the problem of the Advanced Degree and Vocational-Technical Education Leadership, and (2) preliminary plans of the "structure" of a doctoral major in the area under discussion to be implemented at Rutgers - The State University in the Fall Semester, 1966.

Much remains to be completed before final approval of the proposed doctoral major in Vocational-Technical Education here at Rutgers. However, substantial gains have been made and the thinking both expressed through the published papers and the tentative structure should be of immeasurable assistance to those institutions who have contemplated either new programs or revised programs at the advanced degree level.

It has been a pleasure to have the opportunity to work cooperatively with the U.S. Office of Education in advancing programs to develop leadership in Vocational-Technical Education.

Sincerely,

Carl J. Schaefer

Carl J. Schaefer
Co-director

John L. O'Brian

John L. O'Brian
Co-director

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ACKNOWLEDGMENT

Many individuals have cooperated in this Research Project. Their enthusiastic support and cooperation have provided invaluable service and assistance, and their efforts have contributed immeasurably to the project. Special recognition is due Dr. John J. O'Neill, Dean of the Graduate School of Education, Rutgers - The State University, for his whole-hearted endorsement and support of the project.

The interest and advice given by the following individuals in the unfolding of the project is greatly appreciated.

INTRA-UNIVERSITY COMMITTEE

Dr. John J. O'Neill	Dean, College of Education Rutgers - The State University
Dr. Albert Meder	Vice Provost and Dean of the University of Rutgers - The State University
Dr. Robert Worthington	Assistant Commissioner of Education for Vocational Education, State Department of Education of New Jersey (Co-adjutant member of Department)
Dr. Harry Bredemeier	Director, Urban Fellow Program Rutgers - The State University
Dr. Merna Samples	Professor, Home Economics Rutgers - The State University
Dr. James Wheeler	Professor of Education and Chairman of Department of Social and Philosophical Foundations of Rutgers - The State University
Dr. Herbert Levine	Director, Institute of Management and Labor Relations Rutgers - The State University
Dr. Werner Boehm	Dean of the Graduate School Rutgers - The State University

Dr. Henry Torrey	Dean of the Graduate School of Social Studies Rutgers - The State University
Dr. Carl J. Schaefer	Chairman, Department of Vocational-Technical Education Rutgers - The State University

Appreciation is also extended to those who authored the Working Papers, to those who reacted to the Working Papers, and to the discussants. To mention the names of all persons making a valuable contribution to this study would entail much too extensive a list for this acknowledgment. However, their names are listed on the inside of the back cover of the attached brochure entitled "The Advanced Degree and Vocational-Technical Education Leadership."

Carl J. Schaefer
John L. O'Brian
Principal Investigators

OVERVIEW

Following the Symposium a faculty committee was appointed to explore the Symposium findings in terms of the discrete offerings of the Graduate School and the Graduate School of Education, Rutgers. It was felt that Rutgers was typical in many respects, and the findings of this group would not only be pertinent to the implementation of the doctoral program at Rutgers but for other institutions as well.

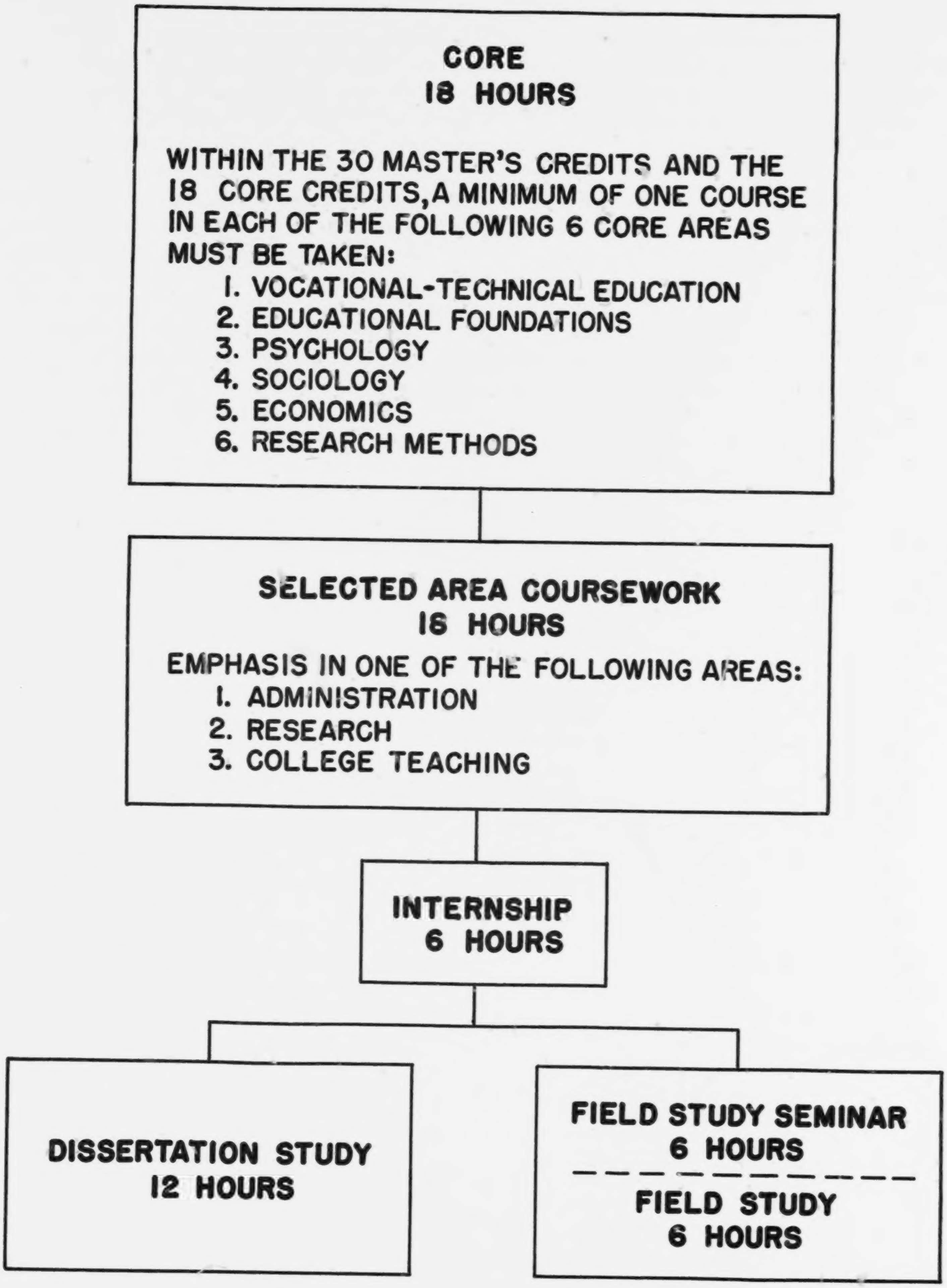
The vocational-technical doctorate program as it evolved from many hours of discussion appears to take the form of four groups of courses and/or experiences as follows: core, selected area coursework, internship, and dissertation study or field study.

The core is designed to broaden the candidate. Each candidate would take, as part of his graduate study, including the Master's program, a minimum of one course in each of the six core areas shown on the following diagram. The core is intended to be flexible in order to afford the candidate a broadening opportunity, or to emphasize any one of the core subject matter areas, if prior work has already been broad in scope.

The selected area coursework, internship, dissertation, field study and the field study seminar are intended to provide the courses and experiences necessary to support the candidate's area of emphasis—administration, research, or college teaching.

The following diagram illustrates the curriculum graphically and does not necessarily represent its chronological order. As shown, the candidate would have two avenues available to the doctorate degree—the dissertation and the field study. The dissertation would be available to those desiring to emphasize research and the discovery of new knowledge and theories. The field study would be available to those desiring to prove their worth as a practitioner in solving a concrete, previously identified problem.

VOCATIONAL-TECHNICAL DOCTORAL MAJOR



CORE
18 HOURS

WITHIN THE 30 MASTER'S CREDITS AND THE 18 CORE CREDITS, A MINIMUM OF ONE COURSE IN EACH OF THE FOLLOWING 6 CORE AREAS MUST BE TAKEN:

1. VOCATIONAL-TECHNICAL EDUCATION
2. EDUCATIONAL FOUNDATIONS
3. PSYCHOLOGY
4. SOCIOLOGY
5. ECONOMICS
6. RESEARCH METHODS

SELECTED AREA COURSEWORK
16 HOURS

EMPHASIS IN ONE OF THE FOLLOWING AREAS:

1. ADMINISTRATION
2. RESEARCH
3. COLLEGE TEACHING

INTERNSHIP
6 HOURS

DISSERTATION STUDY
12 HOURS

FIELD STUDY SEMINAR
6 HOURS

FIELD STUDY
6 HOURS

THE CORE

The core is comprised of six core areas:

1. Vocational-Technical Education
2. Educational Foundations
3. Psychology
4. Sociology
5. Economics
6. Research Methods

Courses are listed below for each core area. These lists are suggestive and would be used as a guide. They are not intended to be restrictive.

CORE AREAS

A. Vocational-Technical Education
  1. Curriculums and Materials for Vocational-Technical Education
  2. Principles and Practices of Vocational Education for School Administrators
  3. Current Concepts of Vocational-Technical Education
  4. Administration and Supervision of Vocational and Practical Arts Education
  5. Organization and Teaching of Part-Time Cooperative Programs

B. Educational Foundations
  1. History of Educational Thought
  2. History of American Education
  3. Philosophy of Education
  4. Problems in History of Education
  5. Programs of Secondary Education

C. Psychology
  1. Social Psychology
  2. Industrial Psychology
  3. Adolescent Psychology
  4. Developmental Psychology: Adolescent and Adult Years
  5. Principles and Theories of Learning
  6. Principles of Guidance

D. Sociology
  1. Social Minorities and Inter-Group Relations
  2. Urban Sociology
  3. Seminar in Sociology of Work
  4. Seminar in Industrial Sociology
  5. Industrial Sociology
  6. Sociology of Adolescence
  7. Sociological Foundations of Education
  8. Society and Education

E. Economics
  1. General Economics
  2. Labor Problems
  3. Economics of Labor
  4. Intermediate Economic Theory
  5. Economic Problems of New Jersey

F. Research Methods
  1. Introduction to Statistics and Logic
  2. Educational and Psychological Measurements
  3. Research in Vocational-Technical Education: Survey and Methods
  4. Statistical Methods in Education and Psychology
  5. Basic Statistical Analysis

SELECTED AREA COURSEWORK

The selected area coursework provides opportunity for emphasis in an area of interest. Three areas of emphasis in vocational-technical education would be available—administration, research, and college teaching. The leadership needs of vocational-technical education can be met through the three areas of emphasis.

Course titles are listed below for each area of emphasis. These lists are suggestive and would be used as a guide. They are not intended to be restrictive.

A. Administration
  1. School Law
  2. Administration of Staff Personnel
  3. Public School Finance
  4. Introduction to School Administration
  5. School Administration I
  6. Community Relations
  7. Administration and Supervision of the Secondary School
  8. Curriculum Development in the Secondary Schools
  9. Administration and Supervision of Vocational and Practical Arts Education
  10. Organization and Teaching of Part-Time Cooperative Programs
  11. Planning and Organizing Facilities for Technical Education

B. Research
  1. Introduction to Statistics and Logic
  2. Basic Statistics for Research
  3. Educational and Psychological Measurements
  4. Measurement and Evaluation in Vocational Education
  5. Statistical Methods in Education and Psychology
  6. Intermediate Statistics for Research
  7. Design of Experiments

8. Research in Guidance and Educational Psychology
9. Research in Vocational-Technical Education. Survey and Methods
10. Statistical Theory for Research Workers I, II

C. College Teaching
   1. Seminar in Higher Education I
   2. Seminar in Higher Education II
   3. Administrative Problems in Higher Education
   4. Foundations of Adult Education
   5. Administration and Supervision of Adult Education
   6. Curriculum and Instruction in Adult Education
   7. Supervision in Vocational-Technical Education
   8. Supervision of Student Teaching in Vocational-Technical Education

THE INTERNSHIP

The internship is an initial experience in a meaningful situation that would supplement and extend the background of the candidate. Firsthand experiences related to the interest as expressed by the area of emphasis is possible. It is anticipated that a problem suitable for the field study or the dissertation would grow out of this involvement, in this way relating to these areas of the doctoral program. The internship would follow the theoretical study and offer opportunity to apply theory to practical problems. The internship experience would be tailor-made to the candidate's needs, interests, and area of emphasis and would be conducted in industrial, educational, research, and governmental settings.

THE DISSERTATION

The dissertation is one of two routes leading to the doctorate that would be available to the student. Completion of the doctoral dissertation would be a demonstration of the candidate's ability to carry out an original piece of important research in the vocational-technical area.

THE FIELD STUDY

The field study, in conjunction with the field study seminar, is an additional route leading to the doctorate. As an option, it represents a tailor-made opportunity to attack in a practitioner sense a problem previously identified. The field study would demonstrate ability to carry out a specific assignment of some magnitude. Students who elect the field study option would have expressed the desire to demonstrate their ability to solve a practical problem utilizing existing theory and knowledge as opposed to carrying out original research as demonstrated by the dissertation. Those electing the field study and field study seminar option would be required to submit a field study report which would include the following: (a) a statement justifying the goals of the field study and the procedures followed, (b) an analysis of the special problems encountered, (c) a description of the accomplishments, and (d) critical commentary on the expected and actual findings. A final oral examination on the report would be conducted by the candidate's committee.

THE FIELD STUDY SEMINAR

The field study seminar would be structured so as to discuss real issues in vocational-technical education, both basic and applied. Experiences encountered in the internship and field study would also serve as a basis for problems and issues. Concepts learned in the Core and Selected Area coursework would be brought to bear on these issues. The seminar would be conducted on an interdisciplinary basis, drawing from the faculties of all areas of vocational education and utilizing faculty from other disciplines. A team approach would be used. Issues would be raised by faculty and students; all such discussion would be oriented toward the feasibility of research in each problem area.

The seminar would also be used to bring together candidates to present field study report proposals to fellow candidates and faculty. This would provide opportunity for candidates to strengthen their proposals based on commentary and feedback.

ADDITIONAL INFORMATION

Persons desiring further information concerning the doctoral program as developed under this grant should contact the Chairman, Department of Vocational-Technical Education, Graduate School of Education, Rutgers - The State University, New Brunswick, New Jersey 08903.